46

WPP 001/4 STE 5,0 d 1
1. Edition

Testoil-ISO 4113

VE 6/11 F 1150 R 92-1 0 460 416 033 supersedes company Steyr engine WD 611 42

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

0,2

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,6-4,0	mm		
1.2 Supply-pump pressure	800	5,4-6,0	bar (kgf/cm²)	; ; ;	
1.3 Full-load delivery with	-	•	cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	800	65,0-66,0	cm <sup>3</sup> /1000 strokes		3,5 (4,0)
charge-air pressure	300	13,0-17,0	cm <sup>3</sup> /1000 strokes	; ! !	3,0 (4,0)
1.5 Full-speed regulation	1230	21,0-27,0	cm <sup>3</sup> /1000 strokes	İ	
1.6 Start	100	min. 80,0	cm <sup>3</sup> /1000 strokes	1	i i
1.7 Load-dependent port-closing		•			:

0.1 Times days		500	800	1150	
2.1 Timing device	n = rev/min mm	0,5-1,3(0,2-1,6)	(3,1-4,5)		,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 4,0-4,6		1150 6,9-7,5	
Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-153)	55	1150 5-138(40-153)	)
2.3 Fuel deliveries				3. Dimens	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	1300 1230 1180 1130	max. 1,5 (19,0-29,0) 49,0-55,0 (47,0-57,0) 67,5-69,5 (65,5-71,5)		K	5,2 <b>-</b> 5,4
	800 500	(62,5-68,5) 55,5-58,5 (53,2-60,8)		MS SVS	1,3-1,5 max. 6,0
switch-off	1150	0		A	
idle stop	400 350 300	max. 1,5 1,0-7,0 (10,5-19,5)		Observations	
End stop	170 250	min. 80,0 max. 55,0		•	
2.4 Solenoid	max. cut-in voltage	xxx min., 10 V rated voltage 12V.			

Testoil-ISO 4113

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WPP 001/4 CUM 3,9 a

1. Edition

En

VE 4/12 F 1250 R 123

0 460 424 006

supersedes company: Cummins engine: 4 T.390

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting 0.3 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 4 Times demand	900	2,3- 2,7	mm		
1.2 Supply-pump pressure	900	4,5- 5,1	bar (kgf/cm²)		
1.3 Full-load delivery with	•		cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	1100	85,0-86,0	cm³/1000 strokes	!	4,0(4,5)
charge-air pressure 1 4 Idle regulation	375	18,5-24,0	cm³/1000 strokes		3,5(4,5)
1.5 Full-speed regulation	1340	24,5-32,5	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 97,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-				:

2. Test Spe	cincations	checking values in brackets (	)		
2.1 Timing device	n ≃ rev/min	750 1,1-1,9(0,8-2,2)	900 (1,8-3,2) 3,2-4	1100 ,0(2,9-4,3)	125 <b>0</b> 3,7-4,5(3,4-4
2.2 Supply pump	n = rev/min ber (kgf/cm²)	400 750 2,3-2,9 3,8-4,	1100 4 5,3-5,9		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)	55-13	1250 8(40-153)	
2.3 Fuel deliveries		<u> </u>		3. Dime	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1400 1340 1250 1100 750 600	max. 1,0 (23,5-33 80,0-83,0 (78,5-84 (82,5-88 88,5-92,5 (86,7-94 88,5-92,5 (86,7-94	.5)	K KF MS SVS	- 5,1-5,4 1,4-1,6 4,2
3Mich off				8	
Idle stop	450 375 300 130 200	max. 1,5 (16,5-26, 40,3-46,3 (38,3-48, min. 97,0 max. 85,0	5)	Observations Stop chec shutoff d 375 min-1	k electric evice at
2.4 Solenoid	max. cut-in voltage	AA 1111111 10 1	•		

BOSCH

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WPP 001/4 FOR 1,6 a
1. Edition

n

VE 4/9 F 2400 R 125

0 460 494 122

Test pressure line

checking values in brackets (

800

6x2x450 mm / 1 680 750 073

supersedes company Ford

engine: Kent Diesel

DHK: : 688 901 022/130 bar

2. Test Specifications

Overflow temperature 45° C

1500

All test specifications are valid only for Bosch Fuel-injection Pump Test Beaches and Testers

Test Instructions and Test Equipment

see-VDT-W-460/.

2000

Pre-stroke setting

2.1 Timing device

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1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3- 4,7	mm		
1.2 Supply-pump pressure	1500	5,3- 5,9	bar (kgf/cm²)		
1.3 Full-load delivery with	-	-	cm <sup>3</sup> /1000 strokes	•	
charge-air pressure Full-load delivery without	1750	28,4-29,4	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
charge-air pressure 1.4 Idle regulation	420	9,0-13,0	cm <sup>3</sup> /1000 strokes	1 *	2,0 (3,0)
1.5 Full-speed regulation	2675	10,4-16,4	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm <sup>3</sup> /1000 strokes	•	
1.7 Load-dependent port-closing	•	•			

	mm	1,0-1,8(0,7-2,1) (3	,8-5,2) 6,	4-7,2(6,1-7,	5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,1-3,7		2000 6,6 <b>-</b> 7,2	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)	55-	2400 -138(40-153)	
2.3 Fuel delivenes			;	3. Dimens	for assembly
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop  switch-off	2950 2675 2550 2400 1750 1000 600	max. 2,0 (9,4-17,4) 19,5-25,5 (18,5-26,5) 27,7-29,7 (26,4-31,0) (26,6-31,2) 24,8-27,8 (23,3-29,3) 23,4-26,4 (21,9-27,9)		K KF MS SVS	3,2-3,4 5,7-6,0 1,6-1,85 3,4
dle stop	570	max. 2,5		E X L Observations	10,4-13,8
End stop	475 420 400 500	3,3-7,3 (1,3-9,3) (7,0-15,0) min. 30,0 max. 30,0			
2.4 Solenoid	mex. cut-in volta	ge xxx min. 10 V rated voltage 12V.			

BOSCH

Geschäftsbereich KM. Kundendienst. Kfz-Außrustung. < 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Aljemagne par Robert Bosch GmbH. 02.84

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WPP 001/4 PEU 2,3k

2. Edition

VE 4/9 F 2075 R 126

0 460 494 121

Test pressure line 6x2x450 mm / 1 680 750 073 supersedes 10.83 Peugeot XD 3 S

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

2. Test Specifications checking values in brackets (

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e-stroke setting mm		See VD 1-W-46U/			
1. Settings	Rot. speed rev/min	Semings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
	1500	5,8- 6,2	mm	0,8	
1.1 Timing device travel	1500	5,6- 6,2	bar (kgf/cm²)	0,8	
1.2 Supply-pump pressure	500	42,8-43,8	cm <sup>3</sup> /1000 strokes	0	1
1.3 Full-load delivery with charge-air pressure	1500	54,5-55,5	cm³/1000 strokes	0,8	2,5(3,0)
Full-load delivery without charge-air pressure  1.4 Idle regulation	350	20,0-24,0	cm <sup>3</sup> /1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2300	25,0-31,0	cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 57,0	cm3/1000 strokes	0	
1.7 Load-dependent port-closing	-	:		•	
		i i			•

	. <del> </del>			
n = rev/min mm				2000 8-8,6(7,5-8,9
n = rev/min bar (kgf/cm²)	200 750 1,4-2,0 3,4-4,0	2000 7,1-7,7		
n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)			2075 40-153)
		:		tor assembly and adjustment
Rot. speed	; Fuel dekvery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
2600	max. 1,0 (24,0-32,0)	0,8 0,8	K	K1
2200	38,0-44,0 (37,0-45,0) 53,0-55,0 (51,7-56,3)	0,8 0,8	KF	5,4-5,7
1500	(52,7-57,3)	0,8	MS	1,2-1,4 4,6
750* 500	48,7-49,7 (46,2-52,2) (40,3-46,3)	0,25 0	SVS	
			A XK	20,2-22,2
400	0		в XL	9,3-12,6
500 400	max. 1,0 8,0-12,0 (6,0-14,0)		Manifold-pressure compensator stroke = 4,5 mm Correction at the adjusting nut. (46)	
350 230 330	(18,0-26,0) min.60 max.60			
max. cut-in voltag	xxx min. 10 V rated voltage 12V.		dajosemg	03.84
	mm  n = rev/min bar (kgf/cm²)  n = rev/min cm³/10 s  Rot. speed rev/min 2600 2300 2200 2000 1500 1000 750* 500  400 350 230 330  max. cut-in voltage	Note   Speed   Fuel delivery   Cm <sup>3</sup> /10s   S5-138(40-153)   S5-138(40-15	n= rev/min 200 750 2000 7.1–7,7	Rot speed   Fuel delivery   Charge-air press   Designation

46

WPP 001/4 VWW 1,6 W 1 2. Edition

see VDT-W-460/

En

VE 4/9 F 2400 R 136 O 460 494 130 supersedes 83 companyVWW engine 086

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre	-stroke	settina	

1.7 Load-dependent port-closing

i. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,4 - 2,8	mm		:
1.2 Supply-pump pressure	1500	4,3 - 4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,0 - 33,0	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery without	-		cm <sup>3</sup> /1000 strokes	İ	; •
charge-air pressure 1.4 (die regulation	475	6,0 - 10,0	cm <sup>3</sup> /1000 strokes	!	2,0 (3,0)
1.5 Full-speed regulation	2600	11,0 - 17,0	cm <sup>3</sup> /1000 strokes	<b>!</b>	
1.6 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	:	

2. Test Specifications checking values in brackets ( )						
2.1 Timing device	n = rev/min	1000 0,6-1,4(0,3-1,7)	1500 (1,9-3,3)	2400 5,8-6,5(5,5-6,9)		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,2-2,8		2400 6,4-7,0		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2400 55-138(40-153)		

2.3 Fuel deliveries	3. Dimen	for assembly			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
switch-off elektr.	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,3-29,3(26,0-30,6) (30,2-34,8) 21,5-24,5(20,0-26,0)		K KF MS SVS *FH	3,2-3,4 5,7-6,0 1,3-1,5 3,4 1,8-2,4
End stop	475 650 1200 400 500	(4,0-12,0) max. 6,0 max. 5,0 min.18,0 max.23,5		Observations *Operatin stroke (	_
2.4 Solenoid	max. cut-in voltag				

Testoil-ISO 4113

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 b

1. Edition

VE 4/8 F 2300 R 143

Test pressure line 6x2x450 mm / 1 680 750 073 supersedes ] Peugeot XUD 7

0 460 484 008

DHK: 1 688 901 022/130 bar

Overflow temperature 459 C

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke	setting
------------	---------

see-VDT-W-460/

1. Settings	Rot speed rev/min	Settings			Charge-air press par (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1250	3,7-	4,3	mm		
1.2 Supply-pump pressure	1250	4,3-	4,9	bar (kgf/cm²)	λ.	
1.3 Full-load delivery with	•	-		cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	1250	28,0-	29,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure 1.4 Idle regulation	400	4,0-	8,0	cm <sup>3</sup> /1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	19,0-	25,0	cm³/1000 strokes	•	
1.6 Start	100	min.	42,0	cm <sup>3</sup> /1000 strokes		•
1.7 Load-dependent port-closing	1250					•

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	700 0,8-1,6(0,5-1,9)	1250 (3,3-4,7)	2000 7,8-8,2(7,3-8,7)
2.2 Supply pump	n = rev/min bar (kgi/cm²)	700 2,8-3,4		2000 6,4-7,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s			2300 55-138(40 <b>-</b> 153)
				2 Dimensions

2.3 Fuel delivenes				3. Dime	nsions
Speed control lever	Rot. speed	Fuel delivery cm3/1000 strokes	Charge-air press bar (kgf/cm²)	Designation	for assembly and adjustment mm
End stop	2650 2500 2400 2250 2000 1250 700	max, 7,0 11,5-17,5 (10,5-18,5) (18,0-26,0) 27,4-29,4 (26,1-30,7) 28,2-30,2 (26,9-31,5 (26,2-30,8) 28,7-31,7 (27,2-33,2)		K KF MS SVS	3,2-3,4 5,2-5,5 1,3-1,5 max 5,0
switch-off	2300	0		A B	
Idle stop	450 400	max. 5,0 (2,0-10,0)		Observations	
End stop	250 500	min.44,0 max.33,0			
2.4 Solenoid	max. cut in vol	xx min. 10 V xrated voltage 12V.			

46

WPP 001/4 VWW 2,4 l

2. Edition

<u>En</u>

₩E 6/10 F 2400 L 144

Overflow temperature 45° C

supersedes 0.83 company VWW engine: 087 T

Different test specs with restriction bore 0.86 mm. See Page 2!

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0 460 406 029

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
	1500	1,2-1,6	mm	0,75	
1.1 Timing device travel	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.2 Supply-pump pressure	600	25,5-26,5	cm <sup>3</sup> /1000 strokes	0	
1.3 Full-load delivery with charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
Fuil-load delivery without charge-air pressure	375	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.4 idle regulation	2600	10,0-16,0	cm³/1000 strokes	0,75	
1.5 Full-speed regulation 1.6 Start	100	min. 42	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-				

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2. Test Spec	cifications	checking value:	s in brackets	( )	·
DA=0,75 bar bar (kgf/cm²) 3,3-3,9 6,8-7,4 8,1-8,7  Overflow delivery n = rev/min 55-138(40-153) 55-138(40-153)	2.1 Timing device LDA=0,75 bar					
55-138(40-153) 55-138(40-153)	2.2 Supply pump LDA=0,75 bar	1			<del>-</del>	
	Overflow delivery					

	cm <sup>3</sup> /10 s	35-138(40-133)	130(40-133)			
2.3 Fuel deliveries	3. Dimens	sions tor assembly and adjustment				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm	
26/ 24/ 15/ 8/	2750 2600 2400 1500 800** 600	max. 4,0 (9,0-17,0) 35,0-37,0 (33,7-38,3) (42,2-46,8) 32,5-33,5 (30,0-36,0) (23,0-29,0)	0,75 0.75	),75 ),75 ,75 ,75 MS	3,2-3,4 6,3-6,6 1,7-1,9 max.6,0	
				**LDA~Hub	5,3	
switch-off elektr.	400	0		8		
Idle stop	375 450	max. 3,0 (4,0-12,0)		Observations  Please note instructions on sheet 2		
End stop	400 500	min. 20 max. 30				
2.4 Solenoid	max. cut-in voits	- AAA 1114 10 T				

**BOSCH** 

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# Adjustment angle = 0° = horizontal control lever position

#### Timing device

1500 1/min 2000 1/min 2000 1/min\* 2400 1/min 0,8-1,2(0,3-1,7) 3,1-3,9(2,8-4,2) 5,8-7,0(5,7-7,1) 5,0-5,8(4,7-6,1)

#### Idle stop

415 1/min 6,0-10,0 (4,0-12,0) ccm/1000 H.

#### Full load

2850 1/min max. 4,0 ccm/1000 H. 2675 1/min 10,0-16,0 (9,0-17,9) ccm/1000 H.

\* Test hydr. cold-start accelerator: At the designated points do not apply voltage to magnet of hydr. cold-start accelerator. 1500 1/min 3,0-4,0 (2,8-4,2) 2000 1/min 4,9-6,1 (4,8-6,2) Testoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 1 1

2. Edition

VE 6/10 F 2400 L 144-1 Overflow temperature 45° C

1.7 Load-dependent port-closing

087 T engine:

0 460 406 030

Different test specs with restriction bore 0.86 mm. See Page 2!

All test specifications are valid only for Bosch Fuel-injection Pump Test Senches and Testers mm

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting	mm		see VDT-W-460/		
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
	1500	1,2-1,6	mm	0,75	
1.1 Timing device travel	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.2 Supply-pump pressure	600	25,5-26,5	cm³/1000 strokes	0	•
1.3 Full-load delivery with charge-air pressure	1500	44,0-45,0	<b>3 3</b>	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	375	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1.4 Idle regulation	2600	10,0-16,0	cm <sup>3</sup> /1000 strokes	0,75	
1.5 Full-speed regulation			cm <sup>3</sup> /1000 strokes	0	
1.6 Start	100	min. 42	cm <sup>3</sup> /1000 strokes		

2. Test Spec	ifications	checking values i	n brackets (	)		
	n = rev/min mm	1500 (0,7-2,1)	1500 (*)	2000 3,6-4,4(3,3-4,7)	2000 (*)	2400 5,6-6,4(5,3-6,7)
and deppty point	n = rev/min bar (kgf/cm²)	600 3,3-3,9	1500* 6,8-7,4	2400 8,1-8,7		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 55-138(40		2400 (0,75 b 55-138(40-15		

	cm <sup>3</sup> /10 s	į			
2.3 Fuel deliveries		3. Dimens	sions tor assembly and adjustment		
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2750 2600 2400 1500 800**	max. 4,0 (9,0-17,0) 35,0-37,0 (33,7-38,3) (42,2-46,8) 32,5-33,5 (30,0-36,0) (23,0-29,0)	0,75	K KF MS SVS **LDA-Hub	3,2-3,4 6,3-6,6 1,7-1,9 max.6,0 5,3
switch-off mech. elektr.	2400 400	0		A B	
Idle stop	375 450 400 500	max. 3,0 min. 20 max. 30		Observations  Please note instructions on sheet 2	
2.4 Solenoid	max. cut-in voit	xxx min. 10 V x rated voltage 12V.	<u> </u>		·····

# Adjustment angle = 0° = horizontal control lever position

#### Timing device

1500 1/min 2000 1/min 2000 1/min\* 2400 1/min 0,8-1,2(0,3-1,7) 3,1-3,9(2,8-4,2) 5,8-7,0(5,7-7,1) 5,0-5,8(4,7-6,1)

#### Idle stop

415 1/min 6,0-10,0 (4,0-12,0) ccm/1000 H.

#### Full load

2850 1/min max. 4,0 ccm/1000 H. 2675 1/min 10,0-16,0 (9,0-17,9) ccm/1000 H.

\* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.
1500 1/min 3,0-4,0 (2,8-4,2)
2000 1/min 4,9-6,1 (4,8-6,2)

VE 4/9 F 2250 R 149

0 460 494 138

WPP 001/4 VWW 1,6 W 3

2. Edition

supersedes7.83 company VWW

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test lestructions and Test Equipment

Pre-stroke setting mm see VDT-W-460/.

086 T

1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,8 - 4,2	mm	0,75	• •
1.2 Supply-pump pressure	1500	4,6 - 5,2	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	600	23,5 - 24,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery without	1500	43,5 - 44,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
charge-air pressure	475	6,0 - 10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2525	9,0 - 15,0	cm2/1000 strokes	0,75	•
1.6 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	: <b>-</b>			•	

2. 1 <b>est Spec</b>	ancations	checking values in brackets (	)			
2.1 Timing device LDA=0,75 bat	n = rev/min	1000 1,8-2,6(1,5-2,9)	1500 (3,3-4,7)	2250 6,1-6,9(5,8		
2.2 Supply pump  LDA=0,75 bas	n = rev/min bar (kgt/cm²)	600 2,5-3,1		2250 6,5-7	<b>',1</b>	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2250 55-138(40-1	) (0,75 bar)  53)	
2.3 Fuel delivenes Speed control lever	Rot speed	; Fuel delivery	Charge-air press.	3. Dimen:	SiONS for assembly and adjustment mm	
switch-off	2750 2525 2250 1500 1000 * 600	max. 3,0 (8,0-16,0) 38,5-40,5 (37,3-41,7) (41,8-46,2) 33,5-34,5 (31,8-36,2) (21,0-27,0)	0,75 0,75 0,75 0,75 0,75 0,75	K KF MS SVS **FH XK XL A	3,2- 3,4 5,7- 6,0 1,2- 1,4 4,4 1,8- 2,4 18,4-20,4 8,6-12,0	
Idle stop	475 1200 400 500	( 4,0-12,0) max. 5,0 min. 22,0 max. 30,0		Observations Manifold-pressure compensator stroke = 4,0 mm Correction at the adjusting nut. (46) *operating		
2.4 Solenoid	maii. cut-in voltagi XALXVORAGEXXX			<pre>*operating stroke (KSB)</pre>		

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03.84

estoil-ISO 4113

Test Specifications
Distributor-type
Fuel-injection Pumps

46

WPP 001/4 PEU 1,9 b

1. Edition

<u>En</u>

E 4/9 F 2300 R 162

Test pressure line 6x2x450 mm / 1 680 750 073

supersedee company Peugeot engine XUD 9

0 460 494 153

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

THE

see VD?-W-460/...

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
! ! Timing device travel	2000	7,8- 8,2	nan		
1 2 Supply-pump pressure	1250	3,9- 4,5	bar (kgf/cm²)		
1.3 Full-load delivery with	•	-	cm²/1000 strokes		
charge-air pressure Full-load delivery without	1250	28,8-29,8	cm <sup>3</sup> /1000 strokes	ļ	2,5(3,0)
charge-air pressure   1.4 Idle regulation	A 550	3,5- 4,5	cm <sup>3</sup> /1000 strokes		B 2,5(3,0)
1.5 Full-speed regulation	2400	19,3-25,3	cm <sup>3</sup> /1000 strokes	i   	
1.6 Start	100	min. 44,0	cm <sup>3</sup> /1000 strokes	• • • • • • • • • • • • • • • • • • •	1
1.7 Load-dependent port-closing	1250			!	•

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	700 0,5-1,5(0,3-1,7)	1250 3,4-4,2(3,1-4,5)	2000 (7,3-8,7)
2.2 Supaly pump	n = rev/min bar (kgt/cm²)	700 2,3-2,9		2000 5,9-6,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2300 55-138(40-153)
2.3 Fuel deliveries	Rot speed	I Fuel delivery	Charge-air press.	3. Dimensions  tor assembly and adjustment  Designation

	CIII-710 3	100/100/					
2.3 Fuel deliveries  Speed control lever	Rot. speed	3. Dimer	1SIONS: for assembly and adjustment mm				
	rev/min	cm <sup>3</sup> /1000 strokes	bar (kgf/cm²)				
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 10,7-16,7 (9,7-17,7) (18,3-26,3) 28,9-30,9 (27,6-32,2) 29,7-31,7 (28,4-33,0) (27,0-31,6) 29,5-32,5 (28,0-34,0)		K KF MS SVS	3,2-3,4 5,7-6,0 1,3-1,5 3,0		
switch-off	2300	0		A B			
Idle stop	A 550 B 350 C 470	3,5- 4,5 8,0-12,0 (6,0-14,0) 8,0-12,0 (6,0-14,0)			l delivery		
End stop	250 500	min. 40,0 max. 35,0			per VDT-I-		
2.4 Solenoid	max. cut-in volt	age xxx min. 10 V					

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6

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,9 d

2. Edition

VE 4/9 F 2300 L 157

0 460 494 144

Test pressure line 6x2x450 mm / 1 680 750 073

supersedes company: engine: 12.83 Fiat X8/48

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

03.84

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
4.4 Timing device terret	1500	4,4- 4,8	men	1	
1.1 Timing device travel	1500	5,1- 5,7	bar (kg#cm²)		
1.2 Supply-pump pressure	-		cm <sup>3</sup> /1000 strokes		
1.3 Full-load delivery with charge-air pressure Full-load delivery without	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes	İ	2,5(3,0)
charge-air pressure 1.4 idle regulation	350	9,0-13,0	cm <sup>3</sup> /1000 strokes		2,0(3,0)
1.5 Full-speed regulation	2400	24,0-30,0	cm <sup>3</sup> /1000 strokes	1	
1.6 Start	100	min. 57,0	cm <sup>3</sup> /1000 strokes		!
1.7 Load-dependent port-closing	1500				

2. Test Spe	cifications	checking values in brackets (	)	
2 1 Timing device	n = rev/min	800 0,7-1,5(0,4-1,8)	1500 (3,9-5,3)	2300 8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,5-3,1		2300 6,9-7,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 \$	400 55-138 (40-153)	•	2300 55-138(40 - 153)
	<u>L</u>	<u>:</u>		

	cm <sup>3</sup> /10 s	55-138 (40-153)	22-120	5(40 - 155)	
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	3. Dinner  Designation	18iONS. for assembly and adjustment mm
End stop	2600 2500 2400 2300 1500 1000 600	3,0-9,0 (2,0-10,0) 14,0-20,0 (13,0-21,0) (23,0-31,0) 34,8-37,2 (32,0-40,0) (31,2-35,8) 32,7-35,3 (31,0-37,0) 34,0-37,0 (32,5-38,5)		K KF MS SVS	3,1-3,4 5,7-6,0 1,4-1,65 2,8
switch-off	2300	0		A B	
Idle stop	450 400 350 300 450	max. 1,5 0,5 - 6,5 (7,0-15,0) min. 50,0 max. 46,0		Observations	· · · · · · · · · · · · · · · · · · ·
2.4 Solenoid	max. cut-in volta	unted voltage 101/			

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# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 2:7 a

1. Edition

VE 3/11F 1250 L 163-1 0 460 413 002

supersedes/ company Fiat-IveCo engine: 8035.06.200

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Yes Instructions and Test Equipment

See VDT-W-480/...

Pre-stroke setting 0,2

1. Settings	Rot. speed	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,5 - 2,9 mm		
1.2 Supply-pump pressure	800	3,8 - 4,4 bar (kg//cm²)		
1,3 Full-load delivery with	-	cm³/1000 stroke	5	
charge-air pressure Full-load delivery without	800	66,5 - 67,5 cm <sup>2</sup> /1000 stroke	3	3,5 (4,0)
charge-air pressure 1.4 Idle regulation	350	21,0 - 25,0 cm <sup>3</sup> /1000 stroke	3	3,5 (4,0)
1.5 Full-speed regulation	1400	12,0 - 18,0 cm <sup>3</sup> /1000 stroke	s	
1.6 Start	100	min. 80,0 cm <sup>3</sup> /1000 stroke	3	
1.7 Load-dependent port-closing	-			

2. Test Spe	cifications	checking values in brackets ( )			
2.1 Timing device	n = rev/min	600 1,0-1,8(0,7-2,1) (2,	800 0-3,4)	5,9-6,7 (5,	1200 6-7,0)
2.2 Supply pump	n = rev/min ber (kgf/cm²)	400 2,0 - 2,6		5,6 -	1200 6,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s			55-138 (4	1250 10-153)
2.3 Fuel delivenes Speed control lever	Rot speed	: Fuel delivery	Charge-air press	3. Dimen	for assembly and adjustment mm
End stop	1450 1400 1350 1250 800 500	max. 1,0 (10,5-19,5) 42,0-48,0(40,5-49,5) 66,5-69,5(65,3-70,7) (64,3-69,7) 56,5-59,5(54,6-61,4)	bar (kgf/cm²)	K KF MS SVS	- 5,1 - 5,3 1,5 - 1,7 4,3
switch-off				A B	
idle stop  End Stop	475 425 350 150 250	max. 1,0 2,0 - 8,0(0,5 - 9,5) (18,5 -27,5) min. 90,0 max. 55,0		Observations	1
2.4 Solenoid	max. cut+n voltage	xxx min. 10V rated voltage 12V.		:	

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 3,9 a

1. Edition

8045.05.200

VE 4/11 F 1250 L 164 0 460 414 013

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,8- 4,2	mm		
1.2 Supply-pump pressure	800	3,7- 4,3	bar (kgf/cm²)	<u>!</u> :	
1.3 Full-load delivery with	-		cm <sup>3</sup> /1000 strokes	•	
charge-air pressure Full-load delivery without	800	73,5-74,5	cm³/1000 strokes	; •	3,5(4,0)
charge-air pressure 1.4 Idle regulation	350	21,0-25,0	cm³/1000 strokes		3,5(4,0)
1.5 Full-speed regulation	1350	29,0-35,0	cm <sup>3</sup> /1000 strokes	!	
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	_			Ì	

2. Test Spe		<del> </del>	)	400	· n
2.1 Timing device	n = rev/min	500 1,3-2,1(1,0-2,4)	800 (3.3-4.7)	125 7,6-8,4(7,	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,3-2,9		1250 5,7-6,3	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		125 55-138(40-	
2.3 Fuel delivenes		<u> </u>	<del></del>	3. Dimen	Sions for assembly
Speed control lever	Rot. special	Fuel delivery	Charge-air press.	Designation	and adjustment mm
End stop	1430 1390 1350 1250 800 500	max. 1,0 4,0-12,0(3,5-12,5) (27,5-36,5) 69,5-72,5(68,3-73,7) (71,3-76,7) 64,0-67,0(62,1-68,9)		K KF MS SVS	5,4-5,6 1,5-1,7 4,3
switch-off	1250	0		A B	
cile stop	500 425 350	max. 1,0 4,0-10,0(2,5-11,5) (18,5-27,5)		Observations	
End stop	150 250	min. 90,0 max. 65,0			_
2.4 Solenoid	max. cut-in voltage	xxx min 10 V rated voltage 12V.			•

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Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

VE 4/11 F 1250 L 164-1

0 460 414 015

WPP 001/4 FIA 3,6 b 1 Edition

company Fiat

80 45.06.200

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-460/... Pre-stroke setting mm

1. Settings	Rot. speed rev/min			Charge-air press. bar (kgf/cm²)	Difference in- delivery cm <sup>3</sup>
1.1 Timing device travel	800	1,9- 2,3	mm	1	
1.2 Supply-pump pressure	800	3,7- 4,3	bar (kgf/cm²)	i !	
1.3 Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes	•	
Full-load delivery without charge-air pressure	800	67,0-68,0	cm <sup>3</sup> /1000 strokes		3,5(4,0)
1.4 Idle regulation	350	23,0-27,0	cm <sup>3</sup> /1000 strokes		3,5(4,0)
1.5 Full-speed regulation	1350	29,0-35,0	cm³/1000 strakes		
1.6 Start	100	min. 90,0	cm <sup>3</sup> /1000 strokæs		
1.7 Load-dependent port-closing					

2.1 Timing device $n = rev/min$ $600$ $800$ $1100$ $1250$ $0,2-0,8(0,0-1,2)$ $(1,4-2,8)$ $4,9-5,5(4,5-5,9)$ $5,3-6,1(5)$ 2.2 Supply pump $n = rev/min$ $600$ $1250$ $2,9-3,5$ $6,0-6,6$ Overflow delivery $n = rev/min$ $300$ $1250$	2. Test Specifications		checking values in brackets (	)		
ber (kgf/cm²) 2,9-3,5 6,0-6,6  Overflow delivery n = rev/min 300 1250	2.1 Timing device					
300 1230						
55-138(40-153) 55-138(40-153)	Overflow delivery n = rev/min cm <sup>3</sup> /10 s		300 55-138(40-153)	1250 55-138(40-153)		

	cm <sup>3/10</sup> s	55-138(40-153)	55-138(4		
2.3 Fuel delivenes Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press.     bar (kgf/cm²)	3. Direct Designation	tor assembly and adjustment
End stop	1410 1380 1350 1250 800 500	max. 3,0 11,0-19,0(10,5-19,5) (27,5-36,5) 59,5-62,5(58,3-63,7) (64,8-70,2) 59,0-62,0(57,1-63,9)		K KF MS SVS	5,2-5,4 1,5-1,7 4,3
switch-off	1250	0		A 8	
Idle stop	480 425 350 150 250	max. 2,5 4,0-10,0(2,5-11,5) (20,5-29,5) min.90,0 max.60,0		Observations	
2.4 Solenoid	max. cut-in voit	- + - 4 1 + - co 12V			

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# Test Specifications Distributor-type Fuel-injection Pumps

44

WPP 001/4 VMA 2.2 b

1. Edition

En

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supersedes

company VM Motori engine: HR 492 HT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

VE 4/10 F 2100 L 168

0 460 404 038

mm

Rot. speed rev/min	Settings			Difference in delivery cm <sup>3</sup>
1600	4,5 - 4,9	mm 0	,8	:
1600	5,6 - 6,2	bar (kgt/cm²)	,8	
1600	59,0 - 60,0	cm <sup>3</sup> /1000 strokes 0	,8	3,0(3,5)
600	41,5 - 42,5	cm <sup>3</sup> /1000 strokes		:
400	16,0 - 20,0	cm <sup>3</sup> /1000 strokes 0		2,5(3,5)
2300	27.0 - 33.0	cm <sup>3</sup> /1000 strokes	.8	
100	min. 55,0	cm <sup>3</sup> /1000 strokes 0	•	i :
	1600 1600 1600 600 400 2300	1600 4,5 - 4,9 1600 5,6 - 6,2 1600 59,0 - 60,0 600 41,5 - 42,5 400 16,0 - 20,0 2300 27,0 - 33,0	rev/min         bas (kg           1600         4,5 - 4,9 mm         0           1600         5,6 - 6,2 bas (kgt/cm²)         0           1600         59,0 - 60,0 cm³/1000 strokes         0           600         41,5 - 42,5 cm³/1000 strokes         0           400         16,0 - 20,0 cm³/1000 strokes         0           2300         27,0 - 33,0         0	1600

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device LDA=0,8 bar	n = rev/min	1000 0,9-1,7(0,6-2,0)	1600 (4,0-5,4)	2100 7,0-7,8(6,7-8,1)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm²)	400 1,5-2,1	2100 7,2-7,8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		2100 55-138(40-153)
2.3 Fuel delivenes		<u> </u>		3. Dimensions

	cm <sup>3</sup> /10 s	55-138(40-153)	5	5-138(40-15	i <b>3</b> )
2.3 Fuel delivenes		3. Dimer	ISIONS tor assembly and adjustment		
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	mm
End stop	2400 2380 2300 2100 1600 *700 600	max. 3,0 11,0-18,0(10,0-19,0) (25,5-34,5) 51,8-54,2(48,5-57,5) 37,5-40,5(36,3-41,7) (56,8-62,2) 50,0-51,0(47,1-53,9) (38,6-45,4)	0,8 0,8 0,8 0,8 0 0,8 0,4	K KF MS SVS	3,2-3,4 5,7-5,9 0,7-0,9 3,6
switch-off	2100	0		A 8	
Idle stop	600 450 400 400 500	max. 1,0 3,5-9,5(2,0-11,0) (13,5-22,5) min. 52,0 max. 46,0		Observations  Manifold- compensate = 6,1 mm Correction adjusting	or stroke n at the
2.4 Solenoid	max. cut-in volt				

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# Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

1. Edition

VE 4/8 F 2300 R 171

Test pressure line 6x2x450 mm / 1 680 750 073 supersodes company: Peugeot engine: XUD 7

0 460 484 010

Pre-stroke setting

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

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Test Instructions and Test Equipment

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	<del></del>	Charge-air pres// bar (kgt/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1250	3,8- 4,2	mm			
1 2 Supply-pump pressure	1250	4,3- 4,9	bar (kgl/cm²)			
1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure 1.4 idle regulation	1250 A 550 2400	- 29,5-30,5 3,5- 4,5 19,0-25,0	cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes		2,5(3,0) B 2,0(3,0)	
1.6 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes		 	
1.7 Load-dependent port-closing	1250					

2. Test Specifications checking values in brackets ( )							
2.1 Timing device	n = rév/min mm	700 0,8-1,6(0,5-1,9)	1250 (5,3-4,7)	2000 8,0-8,8(7,7-9,1)			
2.2 Supply pump	n = rev/min bar (kgf/cm²)	700 2,8-3,4		2000 6,4-7,0			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s			2300 55-138(40-153)			

2.3 Fuel deliveries				3. Dimer	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5) (18,0-26,0) 28,0-30,0 (26,7-31,3) 29,0-31,0 (27,7-32,3) (27,7-32,3) 29,5-32,5 (28,0-34,0=		K KF MS SVS	3,2-3,4 5,2-5,5 1,3-1,5 max. 3,0
switch-off	2300	0		A B	
Idle stop	A 550 3,5 - 4,5 B 350 8,0 -12,0 (6,0-14,0) C 470 8,0 -12,0 (6,0-14,0) 250 min. 44,0 500 max. 34,0			setting	l delivery Idle setting per VDT-I-
2.4 Solenoid	max. cut-in volta	ege xx min 10 V xrated voltage 12V.			·

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03.84

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WPP 001/4 MAN 9,7 1 4

1. Edition

En

PES 6 A 95 D 410 RS 2108

RSV 200-750 A 7 B 607 L

supersedes MAN company

Komb.-Nr. 0 400 876 166

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

1,7 - 1,8 (1,65-1,85)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>2</sup> / 100 strokes	mm .	cm9/100 strokes	mm
1	2	3	4	2	3	6
750	10,8+0,1	10,4-10,6	0,3(0,6)			
200	6,0-6,2	0,9- 1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm		Interme	ediate rate	ed speed	Control- lever dehection in degrees	revimin	rated speed Control rod travel mm	(ev/min	rque control Control rod travel mm
loose	800 x =	0,3-1,0 5,25	-	•	<u>-</u>	ca. 21	200 100	6,1 min.19,5	750 400	10,8-10,9
ca. 49	9,8 4,0 9 5	790-800 810-840 0,3-1,7					200 220-28	6,0-6,2 0 = 2,0	250	11,9-12,5

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting f				
Test oil to rev/min 1	emp 40°C (104°F)   cm <sup>3</sup> /1000 strokes   2	Note changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm <sup>3/1</sup> 000 strokes 7	rev/min	Control rod travel mm	
750	103,5-105,5 (101,5-107,5)	790-800*	-	-	-	<u>-</u>	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 2. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH. estoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 1. Edition and Governors

WPP 001/4 KHD 15,8 k 1

engine

supersedes KHD company F 10 L 413

174 kW (238 PS) / 2300 min-1 Combine harvester

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

PE 10 A 85 D 610/4 LS 2243 RQV 300-1150 AB 1040 DL

 $0-27-72-99-144-171-216-243-288-315^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

# A. Fuel Injection Pump Settings

1-10-9-4-3-6-5-8-7-2

Komb.-Nr. 0 400 649 206

Port closing at pres	stroke	(1,45-1,65)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	10,1+0,1	7,6-7,7	0,3(0,45)			
300	7,3-7,5	1,0-1,6	0,2(0,4)			
				1		
	1	1	1	ı	1	i

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediat	e rated sp	eed		Lower rated	speed		Stidings	leeve travel
Degree of deflection	rev/min Control	Control rod ta	/ denection		Control ro	d	Degree of deflection		Control rod travel	Jonoing 3	1
of control lever	rod travel	rev/min (28	of control lever	rev/min	mm	<b>(4)</b>	ot control lever	rev/min	mm (3	rev/min	mm
1	2	3	4	5	6	<u> </u>	7	8	9	10	11
max.	1150	15,2-17,	3 -	-	-		ca.12	100	min.7,5	250	0,7-1,1
ca.64	9,1 4,0 1400	1190-120 1240-127 0-1,0					355 <b>-</b> 465	300 590- 750	1 5,9-6,1 650=2,0 max.1,0	550 850 1150	2,6-2,8 4,4-4,7 7,5
							<b>3a</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed			Starting Idle switching	, )	Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes 2	rev/min 42 3	rev/min 4_	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm 9
1150	76,0-77,0 (74,0-79,0)	1190-1200*	1000 900	82,0-85,0 (80,0-87,0) 81,0-84,0 (79,0-86,0)	100	14,1-15,1 mm RW	975 925	10,1+0,1 10,3+0,2 10,7+0,2 11,0+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

A20

WPP 001/4 MB 5.7 a 7 1. Edition

PES 6 A 90 D 410 RS 2293 Z

Komb.-Nr. 0 400 876 257

RSV 350-1300 A 0 B 1101 DL

En

1101-2L

a meany Daimler-Benz

OM 352

70 kW (95 PS) Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,15-2,25 (2,10-2,30)

mm : from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning ctorque-control valver
rev/min 1	mm 2	cm <sup>1/1</sup> 00 strokes 3	100 strokes	mm 2	cm 100 strokes	mm õ
1300	8,2-8,3	4,5 - 4,6	0,3(0,45)			
350	7,0-7,2	1,0 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rate	a speea	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees 7	revimin 8	Control rod travel mm	revimin 10	Cantrol rod travei mm
loose	800 x = 5	0,3-1,0	-	-	-		350	7,1	1300 500	8,2-8,3 9,6-9,7
ca.66	7,2 4,0 1500	1340-1350 1395-1425 0,3-1,7					100 350 46 <b>5-</b> 52	min.19,0 7,0-7,2 5 = 2,0	700 1100	9,3-9,5 8,5-8,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	alc-load stop	6 Rotational- speed limitat	speed limitat Characteristics			tuel delivery 5	4a idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	cm <sup>3/</sup> 1000 strokes	rev/min	Control rod travel mm
1300	44,5-45,5 (42,5-47,5)	1340-1350*	500	42,0-45,0 (40,0-47,0)	100	78,0-88,0 (75,0-91,0		

Checking values in brackets

# 1 mm less control rod travel than col. 2

40

WPP 001/4 FAL 7,4 a

1. Edition

Εn

BR-PES6A 90 C 410 RS 2361 BR-PES6A 90 D 410 RS 2361

EP/RSV 250-1150 A1B 1015 L

company Fiat-Allis

engine CP3/720

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

2,15-2,25
Port closing at prestroke (2,10-2,30)

mm (from BDC)

Control rod travel	Fuel delivery	Oifference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	2	cm //100 strokes	mm 6
9.0	5.9-6.4	0,4			
6,0	2,7-3,5				
15,0	13,3-14,3				
9	0,2-0,3				
	9.0 6,0 15,0	mm 2 cm <sup>1</sup> /100 strokes  9.0 5.9-6.4  6,0 2,7-3,5  15,0 13,3-14,3	travel mm 2 cm <sup>1</sup> /100 strokes cm <sup>2</sup> /100 strokes 2 0,4  9.0 5.9-6.4 0,4  6,0 2,7-3,5 15,0 13,3-14,3	travel mm 2 cm <sup>3</sup> /100 strokes cm <sup>3</sup> /100 strokes mm 2  9.0 5.9-6.4 0,4  6,0 2,7-3,5 15,0 13,3-14,3	travel

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

( )	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated opeed  Control rod  travel  mm  9	3 To	rque control  Control rod  travel  mm   11
ca. 66	1 150 1 210 1 250	16,0 10,4 5.7	wi +b	out aux	/ilia	ca. 27	250 100 250	6,0 19,0-21,0 5,7- 6,3	1 130 450 300	0 0 1,2-1,8
<b>2a</b>	1 250	7,8-11,0 4,0- 7,3 0,8- 3,0 0,3- 1,0	with	auxili			330 400 600	4,2- 5,0 2,0- 3,9 0 - 1,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	il-load stop	6 Rotational- speed limitat	11361	uel delivery paracteristics	Starting f	uel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to a rev/min	rev/min	cmi/1000 strokes	rev/min	cm=/1000 strokes	rev/min	Control rod travel mm	
1 130	78,0-80,0	1170-1190*	-	_	100	min. 129,0	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

2.0

Teston Sou 413

40

WPP 001/4 KHD 6,1 e 7. Edition

En

PES 6 A 95 D 410 RS 2471

RSV 325-1150 A 8 B 707 DL

Komb.-Nr. 0 400 876 274

supersed \$85 company KHD engine BF6L 913 C 132 kW Einbau 2300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-1SO 4113** 

1,9 - 2,0 (1,85-2,05)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travet mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1150	11,8+0,1	10,8-11,0	0,3(0,6)			
325	7,1-7,3	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	Interme	diate rate	a speed	Control- lever deflection in degrees	Lower rev/min	rated speed  Control rod  travel  mm	3. To	rque control Control rod travei mm
1	2	3	4	5	6	7	8	9	10	11
loose		0,3 - 1,0 4,75	•	•	-	ca. 21	325 100	6,7 min.19,0	<b>.</b>	11,8-11,9 11,8-12,0
ca. 55	<u> </u>	1190-1200 1235-1265 0,3-1,7					325	7,1-7,3 50 = 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational-speed limitat 3a Fuel delivery characteristics			Starting f	uel delivery 5	<b>4a</b> ) igi	e stop
Test oil to	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm:/1000 strokes	rev/min	cm=r1000 strokes 7	rev/min 8	travel mm
LDA 150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850 LDA 500	0,7 bar 102,5-105,5 (100,0-108,0) 0 bar 62,0-64,0 (59,5-66,5)	100	125,0-135, 122,0-138, = 15,5 - 15,8 mmRW	0)	_

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

# D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 e

Test at n =

500

revimin decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2471 + RSVA 8 B707DL		0,37 0,09 0	11,8-11,9 11,5-11,6 10,1-10,3 9,9-10,1
		:	

Notes

(1) when n =

revimin and gauge pressure =

bar (= maximum full-load control rod travel)



WPP 001/4 MAN 11,1 h

4. Edition

PES 6 A 95 D 410 LS2485

ROV 250-1100 AB850D RQV 250-1100 AB850D

**RQV 750 AB955** 

(1)(2) (3) supersedes

company M A N engine D 2566 M..

(1 - 240 PS)

(2 - 220PS-Śaviem) (3 - Aggregat)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,50-1,60 Porticiosing at prestroke (1.45-1.65)

LS2485Z

LS2485

	шı	m	(1	ro	т	יטי	U	L	)	
-	_	_	-	-	_	-	_	-	-	٢
	۱ ـ									

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  2485 cm <sup>-/100</sup> strokes	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery 2485Z cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3 - 12,5	0,3(0,6)	11,0+0,1	11,2 - 11,4	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)	5,6-5,8	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_

# **B. Governor Settings**

2485 mit 850D (1)

Upper rated	speed		Intermediate	rated spe	eed	Lower rated	Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	ten/win	Control rod travel	Degree of deflection of control lever	revimin	Control rod travel		ontrol travel	
1	2	3	4	5	6	7	8	9	10	11	
ca.50	1140 1200 1220 1300	14,4-17,6 4,0-10,6 0 - 8 0 - 1	-	-	-	ca.13	100 200 300 410	7,5-10,2 5,7-8,5 2,5-5,3	200 600 1140	0,5-2,2 3,8-4,1 8,3	
								-	1140 550	0,4-0,6	

Torque control travel a = 0,5 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp: 40°C (104°F)		Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	tuel delivery ng point I	Intermediate rotational speed Torque-control travel	
rev/min	cm 11000 strokes	revimin	revimin	cm <sup>2</sup> /1000 strokes	rev/min	cm1/1000 strokes	rev/min	լատ
1	2	3	4	5	6	7	8	
1100	123, 0-125, 0 (121, 0-127, 0)	1140-1150 *	500	113, 5-118, 5 (111, 5-120, 5)	100	108,5-116,9 = 12,6-13,0 mm RW	-	-
			}		250	6,0 mm RW		
		4			130-	-190(120-200)		./

Checking values in brackets

\* 1 mm less control rod travel than col 2

Upper rated :	speed			intermediate	rated spe	ed	Lower rated	speed		Sliding s	leave travel
Degree of deflection		Control rod	ta	Degree of deflection	i	Control rod	Degree of deflection	:	Control rod		0
of control lever	rodtravel		(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm (3	rev/min	mm
1	2	3		4	5	6	7	18	9	10	11
max.	1140	14,4-17	,6	-	-	-	ca.13	100	mir. 7,	200	0,7-0,9
ca.42		1140-11 1175-12 0-1,	05				(a)	250 310- 450	5,6-5,8 370 =2,0 max.1,0	500 800 1100	3,5-3,8 4,9-5,4 7,7
	i			İ			(3a)			<u> </u>	<u> </u>

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di Control-roo Test oil terr	-	Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics 5a speed 50	Starting Idle switchir	_	Torque- travel	Control rod
rev/min 1	cm³/1000 strokes	rev/min 43	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 7	rev/min 8	travel mm 9
1100 (2)	111,5-113,5 (109,5-115,5		800 500	(112,5-120,5	)	13,7-14,3 mm RW	800	11,0+0, 11,4+0, 11,5+0,

Checking values in brackets

# Testoil-ISO 4113

**B. Governor Settings** 

2485 + RQV..955

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve travel		
Degree of	Degree of rev/min Control rod deflection (Control travel			Degree of deflection	į	Control rod	Degree of deflection		Control rod travel	, 0		
of control lever	rod travel	mm	2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm	
1	2	3		4	5	6	7	8	9	10	11	
ca. 29	750 770	16.0-22, 9,3-13, 2,5-11,	8	•	•	-		-	-	750	4,6	
	800	U	1		:		33					

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		intermediate speed	Fuel deliv	very characteristics (5a)	Starting Idle switchir		Torque-	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (48)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	7	rev/min 8	travel mm
725 ( <b>3</b> )	122,5-124,5 (120,5-126,5)	765-770*	-	-	200	- 7,0-11,0	-	-
		:	:	1		:		

\* 1 mm less control rod travel than col. 2

2

**Testoil-ISO 4113** 

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 g 3. Edition

PES 6 A 95 D 410 LS 2485 Komb.-Nr. 0 400 846 372

RQ 250/1100 AB 965 DI

supersedes 11.82

MAN

D 2566 M/MF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(1.45-1.65)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1100	11.7+0.1	12.3-12.5	0,3(0,6)			
250	6,0-6,2	1,1-1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Checkin PRG che	g of slider ick 1	Full-load : Setting po	-	-	cifications (4)	Idle spec	•		cifications (5)	Torque	control 3
rev/min	Control rod travel mm	rev/min 3	Control rad travel rnm 4	Control red travel rnm 5	rev/min	rev/min 7	Control red travel	rev/min 9	Control rod	rev/min	travel
600	15,6-16,4	600	16,0	10,7 4,0	1145-1160 1185-1215	250	6,1	150 360-4	min. 7,5 6,0 -6,2 20 =2,0 max. 1,0	-	•
	ontrol travel						114	45-118	0 min -1	L	1 mm less cootes

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	ruel delivery
rev/min 1	cm <sup>3</sup> /-1000 strakes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rod travel cm <sup>3</sup> /1000 strokes-/ mm
1100	123,0-125.0 (121,0-127.0)	-	500	113,5-118,5 (111,5-120,5)	100	108,5-116,5 (105,5-119,5) = 12,6-13,0 mm RW

Checking values in brackets

3.84

40

WPP 001/4 KHD 4,1 c 1

1. Edition

En

PES 4 A 80 D 410/3 RS 2523 Komb.-Nr. 0 400 864 044 RSV 325-1400 A 8 B 540DL

supersedes company KHD engine F 4 L 912 Einbau 2800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

**Testoil-ISO 4113** 

mm (from BDC)

Rotational	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm//100 strokes	mm 6
1380	10,2+0,1	5,7-5,8	0,2(0,35)			
325	8,0-8,2	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Interm	ediate rat	ed speed	Control- lever deflection in degrees 7	rev/min	er rated speed   Control rod travel mm   9	11 3 1	rque control   Control rod travel   mm   11
loose	800 x=	0,3-1,0	-	•	•	ca.19	325 100	7,6 min.19,5	1380	10,2-10,3 10,8-11,1
ca.67	9,2 4,0 1600	1420-1430 1450-1480 0.3 - 1.7					325 670 -	8,0-8,2 730 =2,0	500	11,4-11,5

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

(4)	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat Note changed to		el delivery aracteristics	Starting f	uel delivery 5	<b>43</b> ldl	e stop   Control rod   travel
rev/min	cm <sup>3</sup> /1000 strokes 2	rev/min	rev/min 4	cm#1000 strokes 5	rev/min 6	cm=/1000 strokes 7	rev/min 8	mm 9
1380	57,0-58,0 (55,5-59,5)	420-1430*	-	-	-	-	<u>-</u>	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.84

**BOSCH** 

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WPP 001/4 KHD 6,1 d

2. Edition

PES 6 A 80 D410/3 RS2527 Komb.-Nr. 0 400 866 084 EP/RSV 325-1150 A8 B2014DL

En

supersedes 1.78

company

engine: K H D F6 L912

75kW (102PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

1,90-2,00

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  2527  cm³/100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11.8	5,6 - 5,7	0,2(0,35			
325	+0,1	0,8 - 1,2	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control lever	rev/min	Control rod travel mm	4 Lowe Degree of deflection of control lever 7	rated spe rev/min 8	Control rod travel mm	rev/min	rque control Control rod itravel mm 11
loose	800 ]	0,3-1,0				ca.23	325 100 325	8,5 min.19,5 8,9-9,1	1150 950 775 450	11,8+0, 12,0+0, 12,5+0, 12,5+0,
<b>ca</b> .58		1190-1200 1235-1265 0,3-1,7					390-45 	0 = 2,0	430	12,540,

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ead stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	(5a) idle	e stop
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200 *	775	54,0 - 56,0 (52,0 - 58,0)	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

40

WPP 001/4 KHD 6,1 d 1 1. Edition

En

PES6A 85 D 410 RS 2537 Komb.-Nr. 0 400 876 270 RSV 325-1150 A8B2020 DL A8C2020 DL

supersedes company KHD

ingine BF

BF 6 L 913 97 kW/2300 min<sup>-1</sup> (1) Schlepper DX145-S15 107kW/2300 min<sup>-1</sup> (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestro(4, 85-2,05)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm-/100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
1150	11,0+0,1	8,0-8,2	0,3(0,45)			
325	6,8-7,0	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Testoil-ISO 4113

(1) Uppe	er rated speed	rev/min	Interme	diate rated	d speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod trave: mm	Control rod   travel   mm rev/min   3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	•	ca.21	325 100 325	5.0 min.19,5 5,4- 5,6		
ca.55	10,0 4,0 1350	1190-1200 1225-1255 0,3-1,7	i				510-570	= 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat	Ga Fuel delivery characteristics		Starting fuel delivery 5		da idle stop	
rev/min	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>3/</sup> 1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	Control rod travel mm
) LDA 1150 LDA 800	0,7 bar 77,0-78,0 (75,0-80,0) 0,5 bar 78,0-81,0 (75,5-82,5)	1190-1200*	LDA 650 LDA 500	0,3 bar 77,0-79,0 (74,5-81,5) 0 bar 61,0-63,0 (58,5-65,5)	100	120,0-130,	0 -	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

#### **B. Governor Settings**

1 Upper	rated speed		Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm 3	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min 8	Control rod travel mm 9		Control rod travel mm 11
loose	800 .	0,3-1,0				ca.21	325 100 325	4,9-5,1 min.19,5 5,4-5,6	750	11,0+0,1 12,4+0,2
ca.55		1190-1200 1225-1255 0,3-1,7	-				510-5 700	70 =2,0	450	12,5+0,2

# C. Settings for Fuel Injection Pump with Fitted Governor

,		ad stop	Rotational- speed limitation		3a Fuel delivery characteristics		Starting fuel delivery Idle		stop Control rod
	Test oil temp rev/min 1	o. 40°C (104°F) cm <sup>3</sup> /-1000 strokes 2	Note: changed to .) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strakęs 7	rev/min 8	travel mm
(2)	LDA 1150	0,7 bar 79,5-81,5 (77,5-83,5)	1190-1200*	LDA 800	0,7 bar 88,0 - 91,0 (86,0 - 93,0) 0 bar 60,0 - 63,0 (58,0 - 65,0)		120,0-130, 117,0-133, = 17,4-18, mm EW	þ)	-

Checking values in brackets

Testoil-ISO 4113

\*1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min interesting pressure ~ in bar gauge pressure (g.p.)

	**XXXXXXXXX		
Pump/governor	Setting	Measurement	XXXXXX diminution Control rod trax菌XXXXXX difference XX
	(g p.) bar	(g p.) bar	mm (1)XX
2537 mit 2020DL	0,70	0,37 0,09 0	12,5 - 12,8 12,2 - 12,3 10,6 - 10,9 10,6 - 10,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 HAN 10,8 f 1

1. Edition

En

PE 4 A 95 D 420 RS 2556 Komb.-Nr. 0 400 674 042

RSV 350-1100 A 8 B 1120 R A 8 C 1120 R company MF-Hanomag

1-2-4-3 je 90 ° + 0,5 ° (+ 0.75 °)

\*\* Cold-start test according to VDT-I-420/114
All test specifications are valid for Bosch Fuel Injection Pump est Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

restoil 180 4113

(2,10-2,30)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod	Fuer delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>2</sup> / 100 strokes	mm.	cm 100 strokes	mm
1	2	3	4	2	3	6
1100	10,0+0,1	9,3-9,5	0,3 (0,6)			
400	7,9-8,1	1,4-2,0	0,3 (0,5)			
				j		
		•		}		

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

$\mathbf{R}^{-1}$	r rated speed		Intermed	pate rated	speed	4	Lower	rated speed	(3) To	rque controi
Degree of deflection of control	travel	travel	}		ļ	Control- lever deflection	rev/min	travel	rev/min	travel
lever	2	3	4	5	6	in degrees	8	9_	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	400	7,5	1100	10,0-10,1
	x =	3,75						min. 19,0		10,4-10,6
ca.52	9,0 4,0 1345	1140-1150 1205-1235 0,3-1,7					400 580-640 600		500	10,9-11,0
	1045	0,0-1,7					000	max. 1,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat	11361	uel delivery paracteristics	Starting I	fuel delivery 5	4a Idle stop	
rev/min	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1100	93,0-95,0 (91,0-97,0)	1140-1150*	700	100,0-103,0 (98,0-105,0)	100	19,0-21,0 mm RW	-	-
			500	92,0-94,0 (90,0-96,0)		**	-	

Checking values in brackets

1 mm less control rod travel than col. 2

12.83

BOSCH

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**B8** 

40

WPP 001/4 HAN 10,8 f 2 1. Edition

En

PE 4 A 95 D 420 RS 2556 Komb.-Nr. 0 400 674 043 EP/RSV 350-1100 A 8 B 1121 DR

supersedes =

company MF-Hanomag

1-2-4-3 je 90 ° ± 0.5 ° (± 0.75 °)

engine D 943

\*\* Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1.75-1.95)

mm (from BDC)

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm (2)	cm³/100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
9,9+0,1	8,8-9,0	0,3 (0,6)			
6,7-6,9	1,4-2,0	0,3 (0,5)			
	travel mm 2: 9,9+0,1	travel mm (2) cm <sup>3</sup> /100 strokes 3  9,9+0,1 8,8-9,0	travel mm (2) cm <sup>3</sup> /100 strokes   cm <sup>3</sup> /100 strokes   2   9,9+0,1   8,8-9,0   0,3 (0,6)	travel   cm <sup>1</sup> /100 strokes   cm <sup>1</sup> /100 strokes   mm   2	travel

Adjust the fuel delivery from each butlet according to the values in

#### **B.** Governor Settings

	r rated speed Control rod travel mm		Interme	ediate rate	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque contro  Control rod  travel  mm   11
lose ca.52	8,9 4,0	0,3-1,0 4,5 1140-1150 1160-1190 0,3-1,7	-	•	•	ca. 21	350 100 350 480-540 600	min. 19,0 5,9-6,1	1100 1010 500	9,9-10,0 10,3-10,5 10,8-10,9

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> <sup>Fu</sup>	II-load stop	6 Rotational- speed limitat	ILOGI	uel delivery haracteristics	Starting t	fuel delivery 5	4a Idle stop		
rev/min	cmp 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm-/1000 strokes	rev/m.in	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1100	87,5-89,5 (85,5-91,5)	1140-1150*	700	91,5-94,5 (89,5-96,5)	100	19,0-21,0 mm RW	<b>c.</b>	-	
			500	83,0-85,0 (81,0-87,0)		**			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

BOSCH

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Testoil ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 DAO 9.7a

1. Edition

PES 6 A 95 D 410 RS 2679 RO 200/1100 AB 860 DL Komb.-Nr. 0 400 846 529

supersedes \_

company: Daewoo

D 2156 MT

169 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,95-2,05 (1,90-2,10)

mm (from BDC)

RW = 19,5-21,0 mm

Rotational speed rev/min	Control rad travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	12,7-12,9	0,35 (0,6			
200	5,9-6,1	1,2-1,8	0,35(0,55	)		
				•		

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

1 '	thecking of slider RG check Control rod Full-load speed Setting point				cifications (4)	Idle speed regulation Setting point   Test specifications 5						
	Control rod travel mm	rev/min 3	Control red travel mm	Central red travel mm	rev/min	rev/min 7	Control red travel rnm 8	rev/min	Control rod travel mm	rev/min	Control rod travel	
600 VA =	19,2-20,8 max. 46°	600	20,0		1145-1160 1180-1210	200		200	5,9-6,1	600	10,5-10,6 10,7-10,8 10,6-10,8	

on flyweight assembly dimension a = 0, 1

Speed regulation: At 1145-1160 min<sup>-1</sup>

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	(26)			Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes·/ mm		
LDA 1100	0,7 bar 127,0-129,0 (125,0-131,0)	200	LDA 800 LDA 500	0,7 bar 130,5-133,5 (128,0-136,0) 0 bar 81,5-83,5 (79,5-85,5)	100	179,0-189,0 (176,0-192,0) = 16,2-16,8 mm RW		

Checking values in brackets

2.84

# D. Adjustment Test for Manifold Pressure Compensator

DAO 9,7 a - 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
~	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS2679 + RQ AB 860DL	0,70	0 0,29 0,24	10,8-10,9 8,8-9,0 10,1-10,2 9,2-9,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 HAN 10,8 f

6. Edition

PE 6 A 100 D 320 RS 3030 Komb.-Nr. 0 401 076 006

EP/RSV 350-1100 A 8 B 1119 DRupersede6.82

company MF-Hanomag D 963 A 2

\*\* Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(1,75-1,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>2</sup> /100 strokes	mm
1100	11,5+0,1	15,0-15,2	0,3 (0,6)	2	3	6
350	6,4-6,6	1,3-1,9	0,3 (0,5)			
		Sj				

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

(1) Uppe	er rated speed	rev/min	Interm	ediate rat	ed speed	(4)	Lower	rated speed	(3) To	rque contro
Degree of deflection of control lever	Control rod travel mm	Control rod travel nim rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0 5,5	-	•	-	ca. 24	350 100	5,5 min.19,0	-	-
ca.56	10,5 4,0 1355	1140-1150 1210-1240 0,3-1,7					350 435-495 600	5,9-6,1 = 2,0 0-1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ult-load stop emp 40°C (104°F)	Rotational- speed limitat	HJQ1	iel delivery paracteristics	Starting I	uel delivery 5	<b>43</b> idi	e stop
rev/min	cm <sup>3</sup> /1000 strokes	changed to ) rev/min 3	rev/min 4	cm1/1000 strokes	rev/min 6	cm=/1000 strokes 7	fev/min 8	travel mm
1100	150,0-152,0 (148,0-154,0)	1140-1150*	-	<b>-</b>	100	19,0-21,0 mm RW **	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83



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# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4

6. Edition

PES 6 MW 100/320 RS 1016 ROV 300 - 1400 MW 25-1 Komb. 0 403 446 122

**Testoil-ISO 411** 

supersedes 9.82 company RVI

MIDRO6.02-12 125 kW (170 PS)

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$  \* Start-of-delivery mark  $8^{\circ}$  after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	Port closing at prestroke 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm												
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)							
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6							
1400	11,1+0,	9,15-9,35	0,35(0,6)			_]							
300	5,2-6,	3 0,95-1,35	0,35(0,55	)									
900	11,1+0,		0,5 (0,7)										
500	9,7-9,8		0,35(0,6)	1									
i	ĺ		1	1									

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	h	Lower rated speed			Sliding sleeve travel	
deflection of control	rev/min Control rod travel mm	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	I .	:
1	2	3	4	5	6	7	8	9	10	11
max.	1400 1700	15,2-17,8 0 - 1,0				ca. 12	300	min. 7,5   5,8-5,9		
ca. 62	10,1						490-	550 = 2,0		
						<b>3</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed (2b) timitation intermediate speed		Fuel delivery characteristics 5a high idle speed 5b		fuel delivery 6)	Torque- travel	Control (5) Control rod	
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	rev/min 8	mm 9	
LDA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 56,0-58,0 (53,5-60,5)	100 300 100-	94,0-104,0 9,5-13,5 (7,0-16,0) 230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure =	bar	Measurement  Gauge pressure = bar	diminution Control rod travel difference mm (1)
		· <del></del>		
PS 1016 with	0,23			10,7 - 10,9
MW 25-1			0,5	11,1 - 11,2
			0,20	10,2 - 10,3
			0	9,7 - 9,8

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 8,8 f

3. Edition

0

PES 6 MW 100/320 RS 1016 0 403 446 129

1 - 5 - 3 - 6 - 2 - 4

ROV 300-1400 MW 25-2

supersedes company

10.83

RVI

engine

MIDR 06.02-12 125 kW (170 PS)

0 -60 -120-180-240-300 \* Start-of-delivery mark 8° after start of delivery with control-rou travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Control rod travel

11,1+0,

5.8-5.9

11,1+0,

9,3+0,

mm

Port closing at prestroka

Rotational speed

rev/min

1400

300

900

500

(2,95-3,15)

cm<sup>3</sup>/100 strokes

9.1 - 9.3

0,95-1,35

**Fuel delivery** 

mm (from BDC)

Difference cm³/

100 strokes

0,35(0,6)

0,35(0,55)

0,5(0,7)

0,35(0,6)

RW 9,0-	12,0 mm	
Control rod ravel	Fuel delivery	Spring pre-tensioning (torque-control valve)
nm	cm³/100 strokes	mm
2	3	6
		1

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed		Sliding s	ieeve travel
Degree of deflection of control	rev/min Control	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	1 0	
lever	rod travel	mm rev/min (2a	lever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1400 1700	15,2-17,8 0 - 1,0	-	-	-	ca.13	300 200	5,8-5,9 max. 7,5		
ca.62	10,1	1455-1465 1575-1605					490-	550 = 2,0		
						39				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (2b) imitation intermediate speed	Fuel deliv		enstics (5e) Starting fuel delivery (6) Idle switching point		Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1455~1465*	LDA 900 LDA 500	0,5 bar 86,0-90,0 84,0-92,0 0 bar 52,0-54,0 50,3-56,0	100 300 100-	94,0-104,0 (91,0-107,0) 9,5-13,5 (7,0-16,0) 230 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2 1.84

**B15** 

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel-	diminution difference
	Gauge pressure bar	Gauge pressure : bar	mm (1)	
PS 1016 with	0,12		9,9 -	10,0
RQVMW 25 - 2		0,16	10,7 -	10,8
		0	9,4 -	9,5
		0,5	11,1 -	11,2

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 BET 12,8 b
1. Edition

En

PE 6 P 90/320 RS 136

EP/RSV 250-1100 P 1/338 R

supersedes

engine

company

Berliet M 635-40-C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre tensioning (forque-control valve)		
rev/min	mm <b>2</b>	cm¥100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>9</sup> /100 strokes 3	mm 6		
1000	12,0	9,3 - 10,0	0,8					
600 600 600 200	9,0 12,0 15,0 9,0	3,2 - 4,4 7,6 - 8,8 12,8 - 14,3 1,4 - 2,4						

Adjust the fuel delivery from each outlet according to the values in

#### **.B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rat	ed speed	4	Low	er rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1100	16,0				ca.26	250	8,5	750	0
	1150 1180	- A	witho sprin		ıxi <b>liar</b>	<b>Y</b>	100 250	19,0-21,0 8,2- 8,8		0 1,2-1,8
<b>2</b> a	1150 1220 1340	3.3- 3.3	with sprin		iary		400 560	1,8-4,4		1,2 1,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational speed limitat	33 F.	uel delivery naracteristics	Starting t	uel delivery 5	(4a) ldi	e stop
Test oil to	emp 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm\$1000 strokes 7	ev/min	Control rod travel mm 9000 H.
750	117,0-119,0	1120 1160: 1 - 3 mm RW less than column 2	•	<b>-</b>	100 High 1200	mind.18,5 mm RW idle speed max. 38,0	250	20,0- 26,0

Checking values in brackets

\* 1 mm less control rod travel than col 2



1. Edition

PES 8 P 110/321 RS 193

ROV 250-1250 PA 133 R

Berliet V 825

# Festoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,4 -2,5 (2.35-2.55) Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,5-12,1	0,4			
600 600 600 200	9,0 12,0 15,0 9,0	4,7-6,1 10,8-12,4 20,3-22,5 4,9-6,5				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	i i		Intermediate	e rated sp	4	Lower rated	speed	.   Stiding sleeve tra		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod ta travel mm rev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm (1)
1	2	3	4	5	6	7	8	9	10	11
ca.68	1275 1340 1400 1460	12,5-13,5 5,5-10,5 0- 5,2 0	-	-	-	ca.12	180 300 500 800	7,4-8,0 3,8-4,8 2,2-3,7	1200	7,6
						<b>3</b> a				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel delic high idle s	very characteristics 5a	Starting Idle switchin		Torque- travel	Control Control
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
750	91,0-94,0	1270 1290:0,5-1,5 mm RW less than column 2	-	-	100	180,0-210,0	-	<b>-</b>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. € by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Garmany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH

# **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 BET 12,8 a

1. Edition

EP/RSV 250-1100 P 1/338 R

supersedes company

Berliet

engine

M 635-40-E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

PE 6 P 90 A 320 RS 225

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm¥100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1000	12,0	9,4-9,9	0,8		-	
600 600 600 200	9,0 12,0 15,0 9,0	3,2-4,4 8,3-9,5 13,5-15,0 2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in

#### .B. Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	control rod travel mm rev/min	Interme	Collect		Control- lever deflection	Lowe rev/min	Control red travel	Torque control Control rod travel rev/min mm		
1	2	3	4	5	6	in degrees 7	8	9	10	11	
ca.60	1100 1150	16,0					250	8,5	750	0	
	1180	11,4 7,4	with	without auxiliar spring		У	100	19,0-21,0		0	
23	1150 1220 1340	10,0-12,0 3,5- 5,9 0- 1,0	with	with auxiliary spring			250 400 560	8,2- 8,8 1,8- 4,4 0- 1,0	280	1,2-1,8	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

		<del></del>						
	ull-load stop emp=40°C (104°F)	Rotational speed limitat		uel delivery paracteristics	Starting f	uel delivery 5	<b>4a</b> ) Idi	e stop
rev/min	cm³/1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min 8 CM	Control rod travel mm el 000 H.
750	122,0-124,0	1120 1160: 1-3 mm RW	-	-	100	mind.18,5 mm RW	250	20,0- 26,0
		less than column 2			1200	High idle max.38,0	speed	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 
€ 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

# **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 BET 12,8 a 1

1. Edition

PE 6 P 90 A 320 RS 225 Z

EP/RSV 250-1100 P1/338 R

supersedes

company

engine

Berliet M 635-40-C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,0-2,1 Port closing at prestroke (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cmi¥100 strokes 3	cm³/ 100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1000	12,0	9,3 - 10,0	0,8			
600 600 600 200	9,0 12,0 15,0 9,0	3,2 - 4,4 7,6 - 8,8 12,8 - 14,3 1,4 - 2,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed   Control rod   travel   mm	rev/min  Control rod  travel  mm rev/min  3	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed   Control rod   travel   mm   9	3 To	rque control  Control rod  travel  mm
ca.60	1100 1150 1180	16,0 11,4 7,4 10,0-12,0 3,5- 5,9	sprir	•		ca.26	250 100 250 400	8,5 19,0-21,0 8,2-8,8 1,8-4,4	750 400 280	0 0 1,2-1,8
<b>2</b> a	1220 1340	3,5- 5,9 0- 1,0	sprir	ig	iai y		560	0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

rev/min cm³/1000 strokes rev/min rev/min cm³/1000 strokes rev/min 2 rev/min 4 5 6 7	Pull-load stop		6 Rotational- speed limitat		uel delivery naracteristics	Starting fi	luel delivery 5	<b>4a</b> ) Idi	le stop
750 117,0-119,0 1120 100 mind.18,5		1	1 "	rev/min	cm3/1000 strokes	1 **	cm%1000 strokes	rev/min	Control rod travel mm
1160:1-3 mm RW less than column 2  mm RW High idle speed max. 38.0		117,0-119,0	1160:1-3 mm RW less than	-	-	High	mm RW idle speed	250	20,0- 26,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 ALO 13,8 c

1. Edition

PE 6 P 120 A 420 LS 314

ROV 300-875 PA 313 KR

Komb.-Nr. 0 401 846 348

companyAllis Chalmers engine 25000

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
875	8,2-8,3	16,1-16,3	0,5			
300	4,9-5,1	1,8-2,4	1,0			

Adjust the fuel delivery from each outlot according to the values in

#### **B. Governor Settings**

Upper rated :	i i			Intermediate	rated sp	<b>.</b>	Lower rated	speed	lo	Sliding s	leeve travel
Degree of deflection of control	rev/min Control rod travel	travel '	(e)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		$\odot$
lever	mm	rev/min	<b>(28)</b>	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 66	875 900 950 990 1060	15,0-17 12,2-15 6,0-11 0-7,0	,6 ,1	-	•	-	ca. 10	100 250 300 400 490 550	6,6-8,0 3,8-6,0 2,2-4,6 1,2-2,5 0-1,2	-	-

Torque control travel a = 0,2

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil tei		Rotational-speed 20 limitation intermediate speed	Fuel deliv	very characteristics (5a)	Starting Idle switchin		Torque traval	-control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
875	161,0-163,0 (159,0-165,0		600	146,0-150,0 (144,0-152,0)	100 300	130,0-170,0	875 600	3,2-8,3 3,4-8,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113** 

# **Test Specifications** Fuel Injection Pumps 1001/4 and Governors

**VOL** 7,0 e

7. Edition

En

PE 6 P 110 A 320 RS 367

ROV 250-1200 PA394/2R (1)

supersedes 83 compan**y**olvo

RS 367Z

PA394/2R (2)

engine TD 70 F

RS 367Y

PA394/2R (3)

(1-174kW-237PS)

(2-155kW-210PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(3-180kW-245PS)

# A. Fuel Injection Pump Settings 3,00-3,10 Port closing at prestroke (2,95-3,15)

mm (from 8DC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	12,2 - 12,4	0,4(0,8)	10,9+0,1	10,0 - 10,2	2,5 <sup>±</sup> 0,1** (max.2,2-2,9)
250	4,7-4,8	1,1 - 1,5	0,3(0,6)	4,7-4,8	1,1 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1)

Upper rated s	peed			Intermediate	rated sp	ed	Lower rated	speed	•	Sliding sleeve travel	
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	mm 11
max.	1200	15,2-17	,8	-	-	-	ca.11		min.6,2 4,7-4,9	200	0,3-1,2
ca.66		1260 <b>–1</b> 2 1370 <b>–</b> 14 0 <b>–</b> 1					30		50 -2 N	230	8,2

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		imitation high idle speed			characteristics (58) Starting fuel delivery Idle switching point			Control 5  Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 40	tea/wiu	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm ·
1	2	3	4	5	6	7	8	9
(1) 700	LDA 0,7 bar 122,0-124,0 (119,0-127,0)	1260-1270*	LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	100 250 Stre	160 - 200 (156-204) 11-15 19.max.3	•	<b>-</b>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

<sup>\*\*</sup> In case valve-spring spread is higher, change the initial tension accordingly.

upper rated	speed		គេរ	termediate	rated spi	eed	Lower rated	speed		Sligings	sieeve travel
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm revimin	J. 36	egree of effection control	rey,min	Control rod	Degree of deflection of control	revimin	Control rod travel	): rev/min	mm (1)
1	2	3	4		· 	<u>. ŝ</u>	7 <u></u>	В	9	<u>'0</u>	<u> </u>
max.	1200	15,2-	17,8	-	-	. •	ca.12	100 250	min.6,5 4,7-4.8	200	0,3-1,2
	i								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1230	8,2
ca.67	9,9 4,0 1450	1265-11 1360-11 0 -	385				<u>3a</u>	!			

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of	a stop	Rotational-speed (2b)	Fuel deli	very characteristics (5a)	, idie	$\sim$	Torque- travel	control 5
Test oil ter	mp 40°C (104°F) (2) cm³/1000 strokes	rev/min 4a	<u>.</u>	cm <sup>2</sup> /1000 strokes		ng point cm//1000 strokes	rev/min	Control rod travel mm
1	2	3	4	<sup>;</sup> 5	6	7	8	9
700	LDA 0,7 bar 100,0-102,0 ( 97,0-105,0)	1265-1275*	LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	25 <b>0</b>	165,0-200,0 = 20,0-21,0 mm RW 11 - 15 uug. max. 3)*		-
			1		:			

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

367Y (3)

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed		Sliding si	eeve travel
	revimin Control rod travel	i	(la)	Degree of deflection of control lever	: rey/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
tever	2	rev/min 3	20	4	5	6	7	8	9	10	11
ca.68	1200 1450	15,2-17 0-1	,8		:				min. 6,3 4,7-4,8		
ca.68		1240-12 1355-13					(3a)			• • •	

Torque control travel a =

\_\_\_

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		intermediate speed		Starting fuel delivery  idle switching point		Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	i rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	7	rev/min 8	travel mm 9
LDA 700	0,7 129,0-131,0 (126,0-134,0)		LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	100 250 Stre	165,0-200,0 11-15** uug. max. 3	:	

Checking values in prackets

\* 1 mm less control rod travel than col 2

**VOL** 7,0 e

- 3 -

Testain =	rev/min increasing press	ure - in bar gauge pressur	
Pumpigavernor	Setting Gauge pressure =	Measurement bar Gauge pressure	Control rod <b>VANA</b> X X X X X X X X X X X X X X X X X X X
367 + 394/2R	0,48	0,27	11,5 - 11,6 10,3 - 10,5
357Z + 394/2R	0,36	0,23	10,6 - 10,7 9,9 - 10,1
367Y + 394/2R	0,53	0,26	11,8 - 11,9 10,3 - 10,5
		:	

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 DAF 11,6 k 2

3. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R See Service Information VDT-I-420/114/ Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 7 • 83
company DAF
engine DKX 1160
243 kW

Komb.-Nr. 0 401 876 261

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Festoil-150 4113** 

2,8-2,9 (2,75-2,95)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	emi/100 strokes	100 strokes	mm 2	cm//100 strokes	mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe	r rated speed	rev/min	intermed	diate rated	speed	(4)	Lower	rated speed	(3)	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
	800	0,3-1,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7
loose	x =	5,0					250	6,4-6,6	300	11,8-12,3
ca. 54	10,4 4,0 1425	1140-1150 1270-1300 0,3-1,7					670-730	<b>9 = 2,0</b>		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Test oil te	emp 40°C (104°F)	Rotational- speed limitat Note changed to ) rev/min	rev/min cm²/1000 strokes		Starting fuel delivery 5 Idle		Control rol travel mm 9	
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0- 355,0 (311,0- 359,0) = 19,5- 21,0 mm RW	250	6,5

Checking values in brackets

\* 1 mm less control rod travel than col 2



DAF 11,6 k 2

Test at n = 600	rev/min decreasing pressure -	n par gauge pressure	DAF 11,6 K 2		
Pump:governor	Setting	Measurement	diminution Control rod travel- difference		
	Gauge pressure = t	par Gauge pressure = bar	mm (1)		
PE 6 PRS 372-1y +P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7		
	7 * •				

Notes.

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

#### **Test Specifications** 2 Fuel injection Pumps ② and Governors

WPP 001/4 MAN 11.1 q 2 2. Edition

PES 6 P 110 A 720 LS 375

Kemb.-Nr. 0 402 046 176 (1)

RQ 250/1100 PA432DR

supersedes 9.78 (1)

.. LS375Z

0 402 046 185 (2)

ROV 250-1100 PA373DR (2)

MAN company. D2566 MTSF/MTSFV

(192kW - 260 PS) (1 - Nr. 7985) (2 - Nr. 7024)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

3,00-3,10 mm (from BDC)

Cy1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7	13,6 - 13,8	0,4(0,8)			
	+0,1		•			
250	5,8-7,0	0,9 - 1,5	0,4(0,7)			
700/500		C, Sp. 4 u. 5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQ.. 432DR (1)

Checkin PRG che	•	Control Co		-	Test specifications (4)		Control		Test specifications Control rod		Control rod
rev/min	travel mm 2	rev/min 3	rod travel mm	nd travel mm 5	rev/min 6	rev/min 7	red travel mm 8	rev/min 9	travel mm 10	rev/min 11	travel 0, 1 mm 12
600	10,2-20,8	600	20,0	10,7	1145-1160	250	7,0	100	min.8,5	1100	11,8
		VH ca.	. 49	4,0	1200-1230			250	6,9-7,1	700	11,8
1100	Breakway							B70 <b>-</b>	410= 2,0		
1350	0,1 - 1										

Torgue-control travel on flyweight assembly dimension a =

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	uel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes:/ mm
LDA 1100	0,7 bar 136,0 - 138,0 (133,0 - 141,0)		LDA 500	0,18 bar 123,0 - 127,0 (120,0 - 130,0)	100	215,0 - 235,0
700	133,0 - 137,0 (130,0 - 140,0)		LDA 500	0 bar 113,0 - 116,0 (110,0 - 119,0)		

Checking values in brackets

**B. Governor Settings** 

RQV.. 373DR (2)

Upper rated	speed			Intermediate	rated spe	ed		Lower rated	speed I	i		Sliding sleeve trave:	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(3) (28)	Degree of deflection of control lever	rev/min 5	Contro travel mm	$\sim$	Degree of deflection of control lever 7	rev/min 8	Control ro travel mm 9	3 3	rev/min 10	mm 11
max.	1100	15,2-17	7,8	-	-		•	ca.16	100 250	min.8	-	250 500 800	0,9-1,1 3,8-4,0 5,4-5,5
ca. 68	10,7 4,0 1400	1140-11 1245-12 0 - 1	275					(3a)	520-5	80= 2	2,0	1150	8,3

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil terr		Rotational-speed (2b) limitation intermediate speed	character high idle s	ristics	Starting Idle switchin	_	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,7 bar 136,0-138,0 (133,5-140,5)	1140-1150*	LDA 500	0,18 bar 123,0-127,0 (120,0-130,0)	100	215, 0-235, 0 (211, 0-239,	1100 9) <sub>700</sub>	11,7+0,
700	133,0-137,0 (130,0-140,0)		500	0 bar 113,0-116,0 (110,0-119,0)				

Checking values in brackets

# Testoil-ISO 4113

\* 1 mm less control rod travel than col 2

# D. Adjustment Test for Manifold Pressure Compensator

Testatn =

ແດກ

rev/min uncertains pressure - in bar gauge pressure

500	XXXXXXXX		
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
375 mit 432DR 3752 mit 373DR	0,70	0,18 0,12 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,4 11,0 - 11,1

En

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MAN 11,1v3

2. Edition

Testoil-ISO 4113

PES 6 P 110 A 720 LS 375 Komb.-Nr. 0 4J2 046 220 ROV 250-1100 PA 579

supersedes 81

company: MAN

D 2566 MTE engine:

184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	(2,95-3,15)	mm (from BDC)	RW = 9.0	-12,0 mm; Zyl.	6
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
800	12,8	16,0 - 16,2	0,4(0,8)			
250 1100 650 500	+ 0,1 6,9-7,1 	1,1- 1,7 C, Sp. 4-5	0,4(0,7) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		int	termediate	rated spe	ed .	Lower rated	speed	1	Sliding sleeve travel	
deflection	rod travel	travel			rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min 10	1 mm 11
max.	1100	15,2-17,	8		•	•	ca.11		min.8,5 6,9~7,1 10 = 2,0	500 800	0,7 <b>-</b> 0,9 5,2 <b>-</b> 3,5 5,0 <b>-</b> 5,2
ca.47	10,5 4,0 1350	1140-115 1210-124 0 - 1	0				<b>3</b>			1100	7,9

Torque control travel a =

#### C. Settings for Fuel injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) Fuel delivery characteristics (5a limitation high idle speed (5b)		Starting Idle switchin	. •	Torque- travel	Control (5)	
rev/min cm³/1000 strokes		rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9+ 0,1
LDA 800	0,7 bar 160,0-162,0 (157,5-164,5)	1140-1150*	LDA 650	0,7 bar 160,0-164,0 (157,0-167,0)		215,0-235,0 (211,0-239,0	900	11,5 12,8 12,4
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500 LDA 500	0,17 bar 122,0-126,0 0 bar 98,0-100,0	±3 ±3		980	11,8

Checking values in brackets

\* 1 mm less control rod travel than col. 2

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

MAN 11,1 v 3

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
375 with 579	0,7		12,8 - 12,9
		0,28	12,1 - 12,2
		0,11	10,7 - 11,0
		0	10,2 - 10,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b 3. Edition

En

PE 6 P 120 A 320 RS 377 Komb.-Nr. 0 401 846 400

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyRVI

engine: MIDS 062030 158 KW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# Testoil-ISO 4113

#### A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokas 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,0-15,2	0,5(0,9)			
275	5,4-5,6	1,1-1,7	0,8(1,2)			

ROV 250-1200 PA 425 R

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		
of control lever	rod travel mm	rnm rev/min 2s	of control lever	tev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm 11
1	2	3	-		8	<del>  '                                   </del>	<del>-</del>	3	1.0	
max.	1250	15,2-17,8	-	-	-	ca. 12	200	min. 7,5	250	1,0-1,2
ca. 65	11,6 4,0	1240-1250 1320-1350			:		275	5,4- 5,6	850 200	4,6-4,9 8,0
	1450	0-1,0				280 <b>-</b> 380				

Torque control travel a = \_ mr

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 20 limitation intermediate speed			Starting Idle switchir	. •	Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm 9	
LDA 1200	0,7 bar 150,0-152,0 (147,0-155,0	1240-1250*	LDA 350	0 bar 51,0-55,0 (48,0-58,0)	- 275	- 11,0-17,0 (8,0-20,0)	-	•	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

BET 8,8 b

-2-

300			diminutes.
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6PRS 377 +RQVPA 425R	0,70	0 0,20 0,16	12,6-12,7 11,1-11,2 12,2-12,3 11,4-11,6

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 PEN 7,0 h 1. Edition

Εn

PE 6 P 100 A 320 RS 386

RSV 200-900 P1/421

Komb.-Nr. 0 401 876 265

supersea solvo-Penta company D 70 C/HC/RC engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,8-2,9 (2,75-2,95)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm1/100 strokes	cm <sup>2</sup> / 100 strokes 4	mm 2	cm=/100 strokes	mm 6
900	8,6-8,7	7,1-7,3	0,3(0,6)			
225	7,0-7,2	1,1-1,5	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	er rated speed	1 rev/min 1 Control roa	Interme	ediate rate	d speed	<b>①</b>	Lowe	r rated speed	3 To	rque control
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	revimin	travel	revimin	travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 22	225	6,6	-	-
	X =		j		÷		225	7,0-7,2		į
ca. 48	7,6 4,0 1100	940-950 970-1000 0,3-1,7					340-4	0=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat	14061	uel delivery haracteristics	Starting lidle	tuel delivery 5	4a Idle stop	
rev/min	emp 40°C (104°F) cm <sup>3/</sup> 1000 strokes 2	Note changed to ) rev/min 3	revimin 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control root travel mm
900	71,0-73,0 (69,0-75,0)	940-950*	-	-	100	200,0-250 =20,0- 21,0 mm RW	,0 -	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung c 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en République Federale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11.1q7

3. Edition

PES 6 P120 A 720 LS 388

RQ250/1100 PA 509 (1) RQV250-1100 PA 504 (2) supersedes 7.83

Komb.-Nr. 0 402 046 208 (1)

D 2566 MK 206 kW (280 PS)

0 402 046 209 (1)

0 402 046 204 (2) 0 402 046 205 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prest	roke 3	,00-3,10	mm (from BDC)	Cy1. 6
Rotational speed	Control rod	Fuel delivery		Control rod

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
750	11,4-11,	5 17,7 - 18,1	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQ - 509

Checking		Full-load s Setting po	•	_	cifications (4)	Idle spec	•		cifications (5)	Torque o	control 3
rev/min	Control rod travel mm	rev/min	Control rod travel rnm 4	Control rod travel rom 5	rev/min	rev/min 7	Control rod travel m.m 8	rev/min 9	Control rod travel mm	rev/min 11	Control rod travel mm
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100 1400	Breakway 0-1,0	VH ca		4,0	1180-1210			250	6,2-6,4 390=2,0		10,4-10,6 11,0-11,1
								350-	390=2,0	750	11,4-11,5

Torque-control travel

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever	Control rod stop 3a	Fuel delive	ery characteristics (3b)	Starting f	uel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /~1000 strokes		Control rod travel cm <sup>3</sup> /1000 strokes / mm
LDA 750	0,7 bar 117,0 - 181,0 (174,0 - 184,0)		LDA 650 LDA 500	0,7 bar 174,0 - 177,0 0,31 bar 134,0 - 140,0	100 250	215,0-235,0 12,0- 18,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,6 - 175,5)		LDĄ 500	0 bar 102,0 - 106,0	100-	70 (80-190)

Checking values in brackets

(col. 4-5 inrease by + 3 cm $^{3}$ )

3.84

C10

**B. Governor Settings** 

Upper rated s	peed			intermediate	rated spe	ed	Lower rate	speed I		Sliding sli	Beve travel
Degree of deflection of control lever	rev/miri Control rod travel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	(1) mm 11
max.	1100	15,2-1	7,8				ca. 15	100 250	min.7,8 6,2-6,4	250 500	1,2 4,0-4,3
ca.66		1140-11 1220-12						395	-455= 2,0	1150	8,4
	1400	0 - 1					38				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (20) limitation intermediate speed	characte high idle	ristics	Starting Idle switchin	tuel delivery (6) ng point l	Torque-d travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	mm 9
LDA 750 LDA 1100	0,7 bar 177,0 - 181,0 174,0 - 184,0 0,7 bar 166,0 - 172,0 162,5 - 175,5	1140-1150*	LDA 650 LDA 500 LDA 500	0,7 bar 171,0 - 177,0 0,31 bar 134,0 - 140,0 0 bar 102,0 - 106,0	250 100-1	215,0-235,0 12,0- 18,0 70 (80-190)	1100 975 875 750	10,2-10,4-10 10,4-10 11,0-11 11,4-1

Checking values in brackets (Sp. 4-5 (increase by + 3 cm<sup>3</sup>)

\* 1 mm less control rod travel than co: 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500

500

rev/min increasing pressure – in bar gauge pressure

Company of the Compan	Setting	Measurement	diminution Control rod travel-
Pump/governor	Gauge pressure = bar	Gauge pressure = bar	mm
388 + 509	0,7	0,43 0,31 0	11,4 - 11,5 10,9 - 11,1 10,3 - 10,4 9,2 - 9,3
388 + 504	0,7	0,43 0,31 0	11,4 - 11,5 10,9 - 11,1 10,3 - 10,4 9,2 - 9,3

En

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 11,6 v 1

1. Edition

En

PE6P 110 A 320 RS 407-1 Komb.-Nr. 0 401 876 276 RSV 275-1100 P 5/458-4

supersed∈s

company DAF

engine

**DKTL 1160** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95)

mm (from 80%) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850 275	12,3+0,1 7,0-7,2	13,9-14,2 1,0- 1,5	0,4 (0,75) 0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-150 4113

(1) Uppe	er rated speed	rev/min	Interme	ediate rate	d speed	(4)	Lawer	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3 - 1,0 3,25	-	-	-	ca. 18	275 275	6,6 7,0-7,2	400 300	12,5-12,6 12,7-13,2
ca. 47	11,3 4,0 1350	1135-1145 1275-1305 0,3- 1,7					675 -	745 =2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	6 Rotational- speed limitat	.coer	iel delivery paracteristics	Starting f	uel delivery 5	49 101	e stop Control rod
rev/min	cm <sup>2</sup> /1000 strokes 2	changed to 1 rev/min 3	rev/min 4	cm <sup>2</sup> /1000 strakes 5	rev/min	cm#1000 strokes 7	rev/min 8	travel mm 9
LDA 850	0,7 bar 139,0-142,0 136,5-144,5)	1135-1145*	LDA 600	0 bar 135,5-138,5 (133,0-141,0)	100	245,0-285, (241,0-289)	1	7,1

Checking values in brackets

# 1 mm less control rod travel than cot 2

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DAF 11,6 v 1 -2-

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

000			<del></del>
Pumpigovernor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6PRS 407-1 +RSVP5/458-4	0,70	0,30	12,3 - 12,4 12,1 - 12,2 12,2 - 12,3

Notes:

( ) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 RVI 14,9 c 1. Edition

PES 8 P 120 A320 RS 466 ROV 275-1050 PA 665 1-8-4-2-7-3-6-5 je 45° ± 0,5° (± 75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
companBVI
engine MIVS 083530
268 KW
Komb.-Nr.0 402 048 042

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing mark 13° after

Port closing at prestroke 2,8 - 2,9 mm (from BDC) port closing cyl. 1

Rotational speed rev/min	Control rod travel mrn 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1950	9,6-9,7	19,2-19,4	0,5(0,9)			
275	2,6-2,8	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Testoil-ISO 4113

Upper rated	speed			Intermediate	rated sp	<del>ee</del> d	Lower rated	speed	4	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod traval mm rev/min 3	(1a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1150	15,2-17	,8	-	•	-	ca.7	200	min. 4,2	275	1,5-1,6
ca.63		1105-11 1175-12 0-1,	)5				(3e)	275 275-3	2,6- 2,8 325= 2,0	525	3,1-3,4 4,0-4,5 5,0-5,2 7,7

Torque control travel a = \_ mr

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2b fimitation intermediate speed	Fuel delivingh idle s	rery characteristics (56)	Starting Idle switchir	. •	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm
LDA 1050	0,9 bar 192,0-194,0 (189,0-197,0)	1105-1115*	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2,84

BOSCH

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Test at n =

500 rev/min decreasing pressure - in bar gauge pressure

RVI 14,9c

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES8PRS 466 +RQVPA 665	0,90	0 0,30 0,26	9,6 - 9,7 7,7 - 7,8 9,0 - 9,1 8,1 - 8,3

Notes.

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

C15

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 9,6 k 1

1. Edition

En

PE 6 P 100 A 320 LS 805

EP/RSV 575-1250 PO/814

supersed∈5 company Daimler-Benz OM 401

1- 6- 3 - 5 - 2 - 4 0-75-120-195-240-315° ±0,5° (±0,75°)

129 kW (175 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil ISO 4113

(3,35-3,55)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12,0	11,7-12,4	0,4			
600 200	9,0 15,0 9,0	5,0-6,2 15,3-17,0 3,5-4,5				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	ediate rated	speed 6	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed  Control rod  travel  mm   9	(3) To	rque control  Control rod  travel  mm
ca. 63	1250 1280 1310	16,0 12,1 5,2	1			ca. 30 y sprin	575 200	4,7	•	-
ca. 62	1250 1300 1370	ca.9,7 ca.4,1 0,3-1,0	with	auxil	iary :	pring	575 620	4,3-5,0 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	uel delivery 5	4a Idle stop	
rev/min	emp. 40°C (104°F)   cm <sup>3</sup> /1000 strokes   2	Note changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	cm=i1000 strokes 7	rev/min	Control rod travel mm 9
1230	93,0-95,0 (91,0-97,0)	1265-1275*	-	-	High 1290- 1305	•		

Checking values in brackets

# 1 mm less control rod travel than col. 2

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 9,6 b

6. Edition

PE 6 P 100 A 320 LS 818 Komb.-Nr. 0 401 876 183

RSV 350-1250 P0/810

supersedels.79 company Daimler-Benz

OM 401

141 kW (192 PS) (1) 129 kW (175 PS) (2)

1-6-3-5-2-4 0-75-120-195-240-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

3,4-3,5 (3,35-3,55)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	100 strokes	mm 2	c =/100 strokes	mm 6
1230	10,3+0,1	10,2-10,4	0,3(0,6)	-		
350	7,2-7,4	1,4-2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection	travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	Control rod travel
of control lever	mm 2	3	4	5	6	in degrees	8	9	10	11
10000	800	0,3-1,0	1	-	•	ca. 34	350	7,3	-	-
loose	x =						350	7,2-7,4 0 = 2,0		
ca. 62	9,3 4,4 1400	1280-1290 1360-1380 0,3-1,7					56U-04	**		

The numbers denote the sequence of the tests \*\* Set auxiliary idle spring at 2,0 mm control-rod travel.

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat	11.32	iel delivery jaracteristics	Starting f	uel delivery 5	4a Idle stop		
Test oil te	emp. 40°C (104°F) cm³/1000 strokes	Note changed to :) rev/min	rev/min	cm3/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1230 (1)	102,0-104,0 (100,0-106,0)	1280-1290*	-	-	100	140,0-160,	0 -	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83 Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 12. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

#### **B. Governor Settings**

1 Upper Degree of deflection of control lever	deffection of control lever rev/min mm			dellection travel of control			Degree of deflection of control lever rev/min mm 9			Control Control Control rod travel
ca.63	1250 1350 1450	14,0 8,7 2,8			liary spr	ca. 31 ng	350 100	5,9 19-21	-	-
ca.60	1250 1360 1430	ca.10,8 ca. 4,4 0,3-1,0	with au	X 11 141	ry spring		350 450 500	5,6-6,2 0,9-3,1 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	oad stop	6 Rotational- speed limitat				tuel delivery	Sa Idle stop		
Test oil temp 40°C (104°F)  rev/min		Note: changed to rev/min 3	revimin 4	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230 (2)	93,0-95,0 (91,0-97,0)	1280-1290*	-	-	100	110,0-130,0	-	-	
			6.						

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

1 Upper Degree of deflection of control lever	deflection travel		of control lever rev/min mm		Degree of deflection of control lever cev/min				que control Control rod travel mm	
1	2	3	4	5	6	7	8		10	11
į									l	
									i	
5										

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat.	Ga Fuel delivery characteristics		Starting Idle	fuel delivery	Sa idle stop	
Test oil tem rev/min 1	p 40°C (104°F) cm³/1000 strokes 2	Note- changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rav/min cm³/ 1000 stroke 6 7		rev/min	Control rod travel mm 9

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 9,6 b 2

1. Edition

Er

PE 6 P 100 A 320 LS 818

RSV 350-1100 P0/813

1- 6- 3 - 5 - 2 - 4 0-75-120-195-240-315° ±0,5° (±0,75°) supersedes Daimler-Benz company OM 401

engine 121 kW (165 PS) (1) 110 kW (150 PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

3,4-3,5 (3,35-3,55)

mm (from BDC Zyl. 6

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	11,7-12,4	0,4			
600	9,0 15,0	5,0-6,2 15,3-17,0 3,5-4,5				
200	9,0	3,5-4,5				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	Intermediate rated speed			4	Lowe	r rated sneed	Torque control		
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min	vei		Control- lever deflection	rev/min	Control rod travel mm	rev/min	travel	
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca. 56		14,0				ca. 32	350	5,9	1080	0
	1200 1270	8,9 4,2	Jwitho	out au	xilian	y spring	200	19-21	500	0,1-0,3
ca. 53	1195	ca. 9,7 ca. 3,9 0,3-1,0				pring	350 420 530	5,6-6,2 2,4-4,1 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) F1	ull-load stop	6 Rotational- speed limitat		uel delivery naractenstics	Starting f	uel delivery 5	(4a) Idle stop	
Test oil to rev/min 1	emp. 40°C (104°F)   cm <sup>3</sup> /1000 strokes   2	Note changed to ) rev/min	rev/min	cm=/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
(1) 1080	87,0-89,0 (85,0-91,0)	1115-1130*				110,0-130, idle speed -3,9 mm RW		
(2) 1080	77,0-79,0 (75,0-81,0)	1115-1130*			1200		ax. 6	

Checking values in brackets

# 1 mm less control rod travel than col 2

Test Specifications
Fuel Injection Pumps ①
and Governors

WPP 001/4 SCA 11.0 m 3. Edition

En\_

PE 6 P 110 A 720 RS 3006 RQV 250-1100 PA 184 R (1) ... PA 242 R (2)

companyScania engine. DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 411

(3.25-3.45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delive:y cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12,0+0.1	13.3-14.1	0,6			2.5 <sup>-</sup> 0.1 ** (max.2.2-2.9)
600 200	9,0-9. 12,0+0,1 15.0+0.1 9,0-9	6,8-8,0 13,1-14,6 19,9-21,6 4,4-5,4				
200	3,0-3	1,4 3.1				

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_.

\*\* In case valve-spring spread is higher, change the initial tension accordingly.

**B. Governor Settings** 

RQV..PA 184 R (1)

Upper rated ^	Deed .		Intermediate	rated sp	eed	Lower rated	speed i	la	Sliding s	eeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 2	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm 11
ca. 66	1440 1100 1200 1300	16.0-19.0 0 15.0-17.4 8,4-12,3 1.0-6.4	_	-	-	ca.10	100 250 400 550 680	5,3-7,9 4,8-6,4 2,5-3,8 1,0-2,4	1170	3,3
	1400	0				39				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (20) limitation intermediate speed	Fuel delivery characteristics 56 high idle speed 50		Starting Idle switchir	•	Torque- travel	control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm 9
LDA 1100 <b>(1)</b>	0.7 bar 173.9-175.0 (171.0-177.0)	1135-1145*	LDA 600 LDA 500	U Dar   125 0 141 0	1200	190.0-240.0 10.0-12.0 ung max. 2.0 29.0-34.0 ung max. 4.0	_	<del>-</del>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

BOSCH

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed	1	Sliding s	ieeve travei
Degree of deflection of control lever	revimin Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	) rev/min 10	mm 11
<del>                                     </del>	-							400		200	0 6 0 0
ma×.	1100	15,2-17	,8	-	-	-	ca.10	100	min. 7,8	200	0,6-0,8
ca.64	12,2 4,0 1400	1140-11 1260-12 0-1,	90					250 370 -	6,3-6,5 - 430=2,0		3,9-4,4 5,7-5,9 8,3
							(3a)				

Torque controi travel a =

ma

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delivingh idle :	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control cod
rev/min	cm³/i000 strokes	rev/min (4a)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev:/min 6	cm <sup>2</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,7 bar 161,0-163,0	1140-1150*	LDA 600	0,7 bar 164,5-169,5	100	190,0-240,0 =20,0- 21,0	-	<b>-</b> -
(2)	(159,0-165,0)		LDA	162,0-172,0) 0 bar		mm RW		
			500	133,0-137,0				

Checking values in brackets

\* 1 mm less control rod travel than co: 2

# Tasicil·ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE6PRS 3006 +ROVPA 184R	0,43-0,46	0,20-0,24	0,1 1,3
PE6PRS 3006 +ROVPA 242P	0,70	0 0,34 0,26	13,2-13,3 12,1-12,2 12,8-12,9 12,3-12,5

\_\_

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 8,0 k

6. Edition

PE 6 P 110 A 720 RS 3034

RSV 350-1200 P 1/462 R

Komb.-Nr. 0 401 876 715

Scania

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(3,25-3,45) mm from BDERW = 9,0 - 12,00 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm 1/100 strokes	100 strokes	mm 2	cm 100 strokes	mm 6
700	12,8+0,1	12,1-12,3	0,5(0,7)			2,5 ± 0,1 (2,2 - 2,9)
350	5,9-6,1	-	0,2(0,4)			(2,2 - 2,9)
<u> </u>						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Intermed	piate rated	speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0	-	•	•	ca. 29	350	5,5 5,9-6,1	•	-
ca. 71	11,8 4,0 1450	1240-1250 1310-1340 0,3-1,7					500-5	60=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat		nel delivery aracteristics	Starting f	uel delivery 5	<b>43</b> tak	e stop  Cantrol rod
rev/min	cm <sup>3</sup> /1 <b>000 strokes</b>	changed to ) rev/min 3	rev/min 4	cm <sup>3/1</sup> 000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
700	121,0-123,0 (119,0-125,0)	1240-1250*	1200	126,5-131,5 (124,0-134,0)	100	190,0-240 =20,0- 21,0 mm RW	,0 35	) 5,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

C 22

 $\odot$ 

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 SCA 8,0 d 5. Edition

En

PE 6 P 110 A 720 RS 3034 RQV 200-1200 PA 275 R

company Scania

Komb.-Nr. 0 401 846 709

All last specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,3-3,4 <del>3,25-3,</del> mm (from BDG)RW = 9,0 - 12,0 mm Port closing at prestroke Control rod travel Control rod travel Fuel delivery Rotational speed Difference Spring pre-tensioning (torque-control valve) Fuel delivery cm<sup>3</sup>/ 100 strokes cm<sup>3</sup>/100 strokes rev/min cm<sup>3</sup>/100 strokes  $2,5^{\pm}0,1$ 12,3+0,1 11,7-11,9 0,5 (0,**7**) 600 (2,2-2,9)225 0,9-1,3 [0,2(0,4)]4.4-4.6

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm (28)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	(1)
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	•	-	-	ca. 9	100 225	min.5,9	• • •	0,6-0,8 3,8-4,4
ca. 62	11,3 4,0 1500	1370-1400						4,4-4,6 -390 = 2,0		5,9-6,1 8,4
						<u>3a</u>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2t limitation intermediate speed	Fuel deli high idle :	very characteristics 5a	Starting Idle switching	• . •	Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 600	0,9 bar 117,0-119,0 (114,5-121,5)	1240-1250 *	LDA 1200	0,9 bar 119,5-122,5 (116,5-125,5)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 81,0-85,0 (79,0-87,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

BOSCH

SCA 8,0 d -2-

Pumpigovernor	Setting	Measurement	diminution Control rod travel difference		
	Gauge pressure = bar	Gauge 7 19 sure = Dar	mm (1)		
PE6PRS3034 + RQV PA 275 R	0,90	0 0,40 0,25	12,3-12,4 10,6-10,7 11,9-12,0 10,8-11,0		
	:				

Notes

(1) when n =

rev/min and gauge pressure =

parit maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1

and Governors

WPP 001/4 SCA 8.0 i

Edition

PE 6 P 110 A 720 RS 3034

ROV 200-1200 PA 554

Komb.-Nr. 0 401 846 733

supersede 83 company:Scania engine: DS 805

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /1 <b>00 s</b> trokes 3	100 strokes 4	2 mm	3	6
700	12,8+0,	12,1-12,3	0,5(0,7)			2,5+0,1
225	5,9-6,	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	e rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
	rev/min Control rod travel mm	Control rod travel mm rev/min 28	of control	rev/min	Control rod travel mm 4	Dagree of deflection of control lever	rev/min	mm 3	rev/min	mm 11
max.	1200	15,2-17,8	-	-	-	ca.16	100 225	min.7,4 5,9-6,1	150 500	0,5-0,8 3,8-4,5
ca. 64	11,8 4,0 1500	1240-1250 138 <b>5-</b> 1415 0-1,0	1			L		70 =2,0	850 1200	5,9-6,1 8,4
						<b>3</b>			L	

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter			Fuel deliv	rery characteristics (5a)	Starting Idle switchir	. •	Torque- travel	control (5)
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
LDA 700	0,9 bar 121,0-123,0 (119,0-125,0)	1240-1250*	LDA 1200 LDA 500	0,9 bar 126,5-131,5 (124,0-134,0) 0 bar 85,0-89,0 (83,0-91,0)	100	190,0-240,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n = 500	rev/min decreasing pressure - in increasing	bar gauge pressure	SCA 8,0 i	2
Pump/governor	Setting	Measurement	diminution Control rod travel- difference	i
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	-
PE 6 PRS 3034 +RQV PA 554	0,90	0 0,33 0,22	12,8-12,9 11,6-11,7 12,5-12,6 11,7-11,9	

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 SCA 8.0 i 1 3. Edition

PE 6 P 110 A 720 RS 3034 Z Komb.-Nr. 0 401 846 770

ROV 200-1200 PA 554

supersedent .83 company: Saab Scania DS8 05

Testoil-ISO 4113

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel defivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	10,1 - 10,3	0,5(0,7)			25 <u>+</u> 0,1
225	5,9-6,1	1,5 - 1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Contro: rod travel mm	Control rod travel mm rev/min 2s	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	control rod travel mm 3	rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	_	ca. 16	100	min. 7,4	150	0 -1,0
ca. 61	10,8 4,0 1500	1240-1250 1360-1390 0 - 1,0						5,9-6,1 70 = 2,0	500 850 200	,4-3,9 ,4-5,8 7,9
						<b>3</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil tea		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics 5a peed 5b	Starting idle switchir	. •	Torque- travel	control 5  Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes	rev/min 8	mm 9
LDA 700	0,9 bar 101,0-103,0 (99,0-105,0)	1240-1250*	LDA 1200 LDA 500	0,9 bar 110,5-115,5 (108,0-118,0) 0 bar 85,0-89,0 (83,0-91,0)	100	190,0-240,0 = 20,0-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



SCA 8,0 i 1

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

500			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 3034 Z + RQVPA 554	0,90	0 0,21	11,8 - 11,9 11,6 - 11,7 11,7 - 11,8

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

### **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 SCA 5. Edition

En

PE 6 P 110 A 720 RS 3040 Komb.-Nr. 0 401 876 720 RSV 350-1100 P1/481

supersedes Scania company DS 11 05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(3,25-3,45)

mm (from BDC)

= RW 9,0-12,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	13,1+0,1	15,6-15,8	0,6(0,8)			
350	4,4-4,6	1,8-2,2	0,2(0,4)			
				1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0	•	-	•	ca. 23		4,0 min. 20,0 4,4_4,6	-	-
ca. 66	12,1 4,0 1350	1140-1150 1220-1250 0,3-1,7					460-520			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat				fuel delivery 5	(4a) Idle stop		
Test oil to rev/min 1	cm <sup>3</sup> /1000 strokes	Note changed to 1 rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1100	156,0-158,0 (154,0-160,0)	1140-1150*	700	15 <b>7</b> ,5 -16 0, 5 (155,0-163,0)	100	240,0-290, = RW 20,0 21,0 mm		-	
					350	18,0-22,0			

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4 DEE 15,6 a
1. Edition

En

PES 8 P 110 A 120 RS 3044 EP/RSV 400-1050 P2/435 DR

supersedes

company engine John Deere 8955 T

Komb.-Nr. 0 402 068 700

1-5-6-3-4-2-7-8 je  $45^{\circ} \pm 0,5 (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,75-2,85 Port closing at prestroke (2,70-2,90)

mm (from BDC)

estoil-ISO 4113

Rotational speed	Control rod	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm¥100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1050	10,0+0,1	14,7-14,9	0,4(0,75)			
400	5,2-5,4	2,2- 2,8	0,4(0,75)			
I						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm	3 To	rque control Control rod travel mm
loose	800	0,3-1,0	-	-	<u>-</u>	ca.21	400 100	4,6-4,8 min.16,0		10,0-10,1 10,9-11,2
ca.43,5		1095-1105 1155-1185 0,3- 1,7					400 565-625 800	5,1-5,3 = 2,0 max.1,0	550	9,5- 9,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b F	ili-load stop	6 Rotational- speed limitat	ILOGI	uel delivery naracteristics	Starting	fuel delivery (5)	(4a) Id	le stop
Test oil to rev/min 1	emp 40°C (104°F) cm\$/1000 strokes 2	Note changed to ) rev/min	rev/miri	cm³/1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	Control rod travel mm
LDA 1050	0,65 bar 147,0-149,0 (144,0-152,0)	1095-1105*	LDA 750 LDA 550	0,65 bar 163,5-166,5 (160,0-170,0) 0 bar 130,0-134,0 (127,0-137,0)	100 High 1155 Low i 400	180,0- 200,0 =19-21mmRW idle speed 37,0-47,0 dle speed 22,0-28,0	<b>-</b>	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

DEE 15,6 a

Test at n =

550

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 8PRS 3044	0,38		10,7-10,8
+ EP/RSVP2/435DF		0,27	9,7-10,1

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

### Test Specifications Fuel Injection Pumps 1 PP 001/4 VOL 12,0 d 2 and Governors

3. Edition

PE 6 P 120 A 320 RS 3050 Komb.-Nr. 0 401 846 751

RQV 250-1025 PA 611

supersettes83 companY:01v0 engine TD 120 FC

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067  $\,$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pret	troke (2	,4 - 2,5 .35-2.55)	mm (from BDC)	bei RW 9.	0 - 12.0 mm	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	23,8 - 24,0	0,5(0,9)			2,5 ± 0,1 (2,2 - 2,9)
250	3,6-3,8	2,2 - 2,6	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed	1	Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm cev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
	12	3	ļ <del>*</del>	13	-		-	3	10	<del>- ' '</del>
max.	1080	15,2-17,8	-	-	-	ca. 8	100 250	min.5,1 3,6-3,8	200 475	0,6-0,9 3,9-4,5
ca.64		1085-1095 1150-1180				} :		60 = 2,0	670 <b>-</b> 940	6,4-6,6
] ;	1300	0 - 1,0							1025	7,5
				İ		<b>3</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delichigh idle s	very characteristics (Se peed (Sb)	Starting Idle switchin	. •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm
LDA 700	1,2 bar 237,5-239,5 (234,5-242,5)	1085-1095*	LDA 700	0 bar 142,0-144,0 (139,0-147,0)	100	20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

-2-

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

VOL 12,0 d 2

Pump/governor	Setting	Measurement	diminution Control rad travel difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
PE6PRS3050		1,20	13,0 - 13,1
withPA611		0	9,1 - 9,2
	0,67		12,2 - 12,3
		0,3	10,5 - 10,7

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Dg

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8

4. Edition

Testoil-ISO 4113

PE 10 P 110 A 920/5 LS 3073 RQV 300-1150 PA 549 Komb.-Nr. 0 401 849 703 1-10-9 - 4- 3 - 6 - 5 - 8 - 7 - 2 0-27-72-99-144-171-216-243-288-315 ° -0,5 ° (-0,75 °) superseq 83 company KHD BF 10L 413 F 265 kW (360 PS) bei 2050 min -1 bzw. 259 kW (352PS)

(Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1,6+0,1	13,8-14,0	0,4(0,8)			
6,9-7,1	1,8 - 2,4	0,4(0,7)			
	mm 2 11,6+0,1	mm cm³/100 strokes 2 3 11,6+0,1 13,8-14,0	travei mm cm³/100 strokes cm³/ 100 strokes 2 3 4  11,6+0,1 13,8-14,0 0,4(0,8)	travel travel cm³/100 strokes cm³/ 100 strokes mm 2 2 11,6+0,1 13,8-14,0 0,4(0,8)	travel mm cm³/100 strokes 2 cm

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated :	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travei
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(1a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	220	15,2-17	,8	-	-	-	ca. 24	300	min.8,4 6,9-7,1	550 3	
ca. 64	9,7 4,0 1400	1190-120 1270-130 0 - 1,	00				39	465-5		850 5 150	,4 <b>-</b> 5,7 7,8

Torque control travel a =

MI.

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)					Fuel delivery characteristics (5a) high idle sceed (5b)		fuel delivery 6	Torque- travel	control 5 Control rod
rev/min	cm³/1000 strokes	rev/min	•	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm 9
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)	1190-1200	*	LDA 500	0 bar 85,0-89,0 (82,0-92,0)	100	110,0-140,0	1025 875	10,7+0,2 10,9+0,2 11,4+0,2 11,6+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

D10

KHD 15,8 f

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1)
PE 10 PLS 3073 RQV PA 549	0,55	0,90 0 0,39	11,2-11,3 11,6-11,7 9,4-9,5 10,1-10,3

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps (1) P 001/4 RVI 12,0 e and Governors

1. Edition

PFS 6 P 120 A 320 RS 3117 Komb.-Nr. 0 402 046 740

Rotational speed

rev/min

950

275

ROV 275-950 PA 495-1

supersedes.

company: RV I

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 580 750 067

MIDR 063540 engine: 224 kW

Port closing mark '9°' after All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers. port closing cyl. 1

A. Fuel Injection Pump Settings

Port closing at prestroke

Control rod

13,1+0,1

4,5-4,7

3,5-3,6 (3,45-3,65)	mm (from BDC)	RW = 9	,0-12,0 mm	
Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm. 6
20,4-20,6	0,5(0,9)			
1,3-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

**Testoil-180 4113** 

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 21	of control	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3		
<u> </u>	-	3	<del> </del>	<del>                                     </del>	<u> </u>	ļ		·····		
max.	1140	15,2-17,8	<u> </u>	-	-	ca.10	200	min. 6,2		,0-1,2
			T	į .	1		275	4,5-4,7		B,4-3,8
ca. 63	12,1	1015-1029	5		1				•	5,8-6,0
	4,0	1150-1180	)	l					<b> 1100</b>	8,1
!	1300	0 - 1,0			i	285-395	1			
				ļ		<b>3</b>				

Torque control travel a =

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#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten	stop	Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics 50 peed 50	Starting Idle awitchir	. •	Torque- travei	Control rod
tea/wiu	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 950	0,7 bar 204,0-206,0 (201,0-209,0		LDA 500	0 bar 123,0-125,0 (120,0-128,0)	100 275	160,0-180,0 (156,0-184,0 14,0-20,0 (11,0-23,0)		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

**D12** 

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6PRS 3117 + RQV PA 495-1	0,70	0 0,42 0,34	13,1-13,2 10,3-10,4 12,5-12,6 10,9-11,3

Notes

(1) when n =

rev/min and gauge pressure =

par (= maximum full-load control rod travel)

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 e 1

1. Edition

PES 6 P 120 A 320 RS 3117 Komb.-Nr. 0 402 046 741

RQV 275-1100 PA 495-2

supersedes companRVI

KOMD.-Nr. U 4U2 U46 741

engine: MIDR 063540

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Port closing mark '9°' after

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers port closing cyl. 1

# A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1100	13,1+0,1	20,4-20,6	0,5(0,9)			
275	4,5-4,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	e rated sp	eed		Lower rated	speed			Sliding s	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 28	deflection of control	rev/min 5	Control root trave! mm	4	Degree of deflection of control lever 7	rev/min 8	Control ro travel mm 9	3 -	rev/min 10:	mm 11
max. ca. 66	1140 12,1 4,0 1400	15,2-17,8 1165-1175 1270-1300 0 - 1,0	] -	_	_			275	min. (		450	1,0-1,2 3,4-3,8 5,8-6,0 8,1

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics (5e)	Starting Idle switchir	. •	Torque- travel	Control roc
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	ten/win	
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 204,0-206, (201,0-209,		LDA 500	0 bar 123,0-125,0 (120,0-128,0		160,0-180,0 (156,0-184,0 14,0-20,0 (11,0-23,0)	)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2 2.84

BOSCH

RVI 12,0 e 1 - 2 -

Testatn =

rev/min increasing pressure - in bar gauge pressure

500		· · · · · · · · · · · · · · · · · · ·	
imp/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 PRS3117 +RQVPA 495-2	0,70	0 0,42 0,34	13,1-13,2 10,3-10,4 12,5-12,6 10,9-11,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 K 2

1. Edition

PE 6 P 120 A 320 RS 3118

RQV 300-1050 PA 657-2

supersedes

Komb.-Nr. 0 401 846 779

companyVolvo BM

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

engine. TD 121 F

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at pres	troke	2,6-2,7 2 55-2 75)	mm (from 8DC)	RW	= 9,0-12,0  mm	\
Rotational speed rev/min	Control rod travei mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	23,5-23,7	0,5 (0,9)			2,5 <sup>±</sup> 0,1
300	3,7-3,9	2,2-2,6	0,5 (0,7)			(2,2-2,9)
			İ			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding 5	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever		rev/min 2a	lever	rev/min	mm (4)	lever 7	rev/min 8	mm (3)	rev/min	11
<u> </u>			<del> </del>			40	400	-:- 5 2		
max.	1130	15,2-17,8	-	-	-	ca. 10	100	min. 5,2		1,1-1,3
ca. 64	12,2	1105-1115	1	l		Ì	300	3,7-3,9	660	3,7-4,2
	4,0				1	•	350-	410 = 2,0		6,4-6,6
	1325	0 - 1,0	į	1					985	,,,
			1			(3)			1050	7,4
						<b>3</b>			1050	1,4

Torque control travel a = - mn

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2) timitation intermediate speed	Fuel deli- high idle :	very characteristics 56 speed 5b	Starting Idle awitchin	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 700	1,2 bar 235,0-237,0 (232,0-240,0)	1105-1115 *	LDA 1000 LDA 700	1,2 bar 231,0-237,0 (228,0-240,0) 0 bar 136,0-138,0 (133,0-!41,0		24,0-270,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

VOL 12,0 K 2

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

200			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6PRS 3118 + RQVPA 657-2	1,20	0 0,64 0,25	13,2-13,3 8,9-9,0 12,2-12,3 10,0-10,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MB 18,3 d

3. Edition

**Testoil-ISO 4113** PE 10 P 110 A 320 LS 3818

ROV 300-1150 PA 486-2

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 0 -27 -72 -99 -144 - 171 - 216 - 243 - 288 - 315° - 0,5° (-0,75°)

supersects 83

compan Daimler-Benz OM 423 engine 261 kW (355 PS)

Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

ev/min L	1			i	1	(torque-control valve)
۱   ا	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	ოო 2	cm <sup>3</sup> /100 strokes 3	mm 6
1150	12,1+0,1	12,4- 12,6	0,4(0,8)			
300	8,5-8,7	1,4 - 2,2	0,4(0,7)	•		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod ta travel mm rev/min 28	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min.10,2		1,0-1,2
ca. 65	11,1 4,0 1400	1190-1200 1240-1270 0 - 1,0				330-470	300	18,5-8,7		3,4-3,7 4,9-5,3 7,6
						39				

Torque control travel a = 0.5

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roa Test oil ten		Rotational-speed ( limitation intermediate speed	$\smile$	Fuel deliv	very characteristics 5e speed 50	Starting Idle switchin	. •	Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	•	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1150	124, 0-126, 0 (121, 5-128, 5)		*	600 900	110,0-114,0 (107,0-117,0) 118,0-123,0 (115,0-126,0)	100	1 3,0-1 0,0	600	12,1+0,1 12,5+0,1 12,4+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil ISO 4113

40

WPP 001/4 MB 21,9 a 3 1. Edition

En

PE 12 P 120 A 320 LS 3819-1 RQ 750 PA 635-1
1-5-9-8-3-4-11-10-2-6-7-12
0-15-60-75-120-135-180-195-240-255-300-315°+0,5° (+0,75°)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

company. Daimler-Benz engine: OM 424 LA

327 kW Komb.-Nr. 0 401 840 714

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

4,0 - 4,1
Port closing at prestroke (3,95 - 4,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	19,0 - 19,2	0,5 (0,8			
300	4,8-5,0	1,4 - 2,0	0,8 (1,2			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin	g of slider	Full-load s Setting po		-	cifications (4)	idle spec	_		cifications (5)	Torque d	control 3
rev/min	Control rod travel mm 2	i	Control red travel mm 4	Control rad travel rnm 5	rev/min 6	rev/min 7	Control rod travel rnrn 8	1	Control rod trave: mm	rev/min	Control rod travel mm
•	-	-	-		750-755 780-790 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a

750 - 755 min<sup>-1</sup> Speed regulation: At 1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	tuel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes·/ mm
700	190,0 - 192,0 (187,0 - 195,0)	-		-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

2,84

BOSCH

WPP 001/4 GUS 18,0 a 1. Edition

En

PE 6 P 130 A 720 RS 7009 RQV 250-1000 PA 683 Komb.-Nr. 0 402 646 816 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company Guascor engine F 180 220 kW

All test specifications are valid for Bosch-Fuel Injection Pump Test-Benches and Testers

A. Fuel Injection Pump Settings

Teston 8:0 4113

Port closing at pres		,0 -3,1 .95-3.15)	mm (from BDC)	RW = 9,0	) - 12,0 mm	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1 000	14,5+0,1	31,6 - 32,0	0,6(1,05)			
250	6,4-6,6	2,6 - 3,2	0,95(1,3)			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding sleeve travel	
deflection of control	rev/min Control rod travel mm 2	Control rod ta travel mm rev/min 28	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1060	15,2-17,8	-	-	-	ca. 13	100	min.8,0	225	1,2-1,3
ca. 62	13,5 4,0 1300	1040-1050 1155-1185 0-1,0				250-350 <b>3a</b>	j	6,4-6,6		2,7-3,2 5,6-5,8 7,7

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		intermediate speed	Fuel delivings idle s	rery characteristics (5a)	Starting Idle switchin	. —	Torque-control 5 travel  Control roc travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	Lea/WIU	mm
1	2	3	4	5	3	7	8	9
1000 -	316,0-320,0 (311,5-324,5)	1040-1050*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2,84

Testoil-ISO 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 a 1 1. Edition

PE 8 ZWM 140/120 RS 19/11 Komb.-Nr. 0 406 038 005

RQU 375/1100 ZWA 19 DR

Replaces

Engine: MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} - 0.5^{\circ} (-0.75^{\circ})$ 

Note VDT-W-Gen./7

Governor adjustement according to VDT-I-420/112
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

mm (from BDC) Zyl. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed min-1 1	rod travel mm 2	Average value cm <sup>3</sup> /1000 strokes 3	in fuel delivery cm <sup>3</sup> /1000 strokes 4	Checking values cm <sup>3</sup> /1000 strokes 5	valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600 200 1080 375	9,0 9,0 -	143,0-163,0 71,0-91,0 C, Sp. 2	14,0 (21,0) 14,0 (21,0) 8,0 (12,0) 8,0	138,0-166,0 66,0-96,0 C, Sp. 2	-

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

100	mm min-1 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	ted spec min- 5	control- rod travel mm 6	Ì	Lower rat Control lever de- flection degrees 7	ed spee min <sup>-1</sup> 8	d   Control-   rod   travel   mm   9	min -1	e control Control- rod travel mm 11
max. ca. 58	500 1100 1130 1200 1250 1350	23,5-24,0 19,0-19,5 15,0-18,0 6,2-12,4 0 - 7,8 0 - 1,0	(Posi slid	tion ( er)		0,4	22 -1,6 0	600 150 250 375 500 900	2,1-2,6 12,0-14,0 10,4-12,4 5,6-6,0 2,3-3,1 1,1-2,0	700 100 1100	21,7-22,1 20,9-21,5 0 19,5-20,0 19,0-19,5

Torque control travel a =

Speed regulation: At

10/5-1045mmless control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Fuel-de charact		Starting fuel delivery		
min :	cm <sup>3</sup> /1000 strokes	min 3	min :	cm³/1000 strokes 5	min . 6	cm <sup>3</sup> /1000 strokes 7	
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	-	•	
			700	228,0-236,0 (224,0-240,0)			
			500	216,0-224,0 (212,0-228,0)			
			l		<u> </u>	12 03	

Checking values in brackets

WPP 001/4 MTU 29.9 a

10. Edition

Replaces 1.83

Engine MB 837 A a

PE 8 ZWM 140/120 RS 19/11 RQU 375/1100 ZWA 25 DR Komb.-Nr. 0 406 038 019

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ )

Note VDT-W-Gen./7

Governor adjustement according to VDT-I-420/112
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

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Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min=1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600	9,0	143,0-163,0	14,0 (21,0)	138,0-166,0	-
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	I
1080	-	C, Sp. 2	8,0 (12,0)	C, Sp. 2	
380			8,0		<b>{</b>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spee	ed	Lower rat	ed spee		Torqu	e controi
Control lever deflection degrees	mm min-'	Control- rod travel mm min 1	Control lever flection degrees 4	mın 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	Controi- rod travel mm 11
max.	500	23,5-24,0	( Pos	ition	of	22	600	2,1-2,6		21,7-22
ca. 58	1100 1130 1200 1250 1350	19,0-19,5 15,0-18,0 6,2-12,4 0 - 7,8 0 - 1,0	sli	der)	1100 1180	0,4-1,6		12,0-14,0 10,4-12,4 5,6-6,0 2,3-3,1 1,1-2,0	1000	19,5-20

Torque control travel a = 0,8

Speed regulation: At

1075-1085nm ins Control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery	Control rod stop	Fuel-de charact		Starting fuelli- delivery		
min cm <sup>3</sup> /1000 strokes		min-'	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm:/1000 strokes 7	
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	100	18,0=18,2 mm	
			700 500	228,0-236,0 (224,0-240,0) 216,0-224,0	375	idle stop 53,0-58,0	
				(212,0-228,0)		42.03	

Checking values in brackets

<sup>\*</sup> Limit the quantity at the exess-fuel stop.

WPP 001/4 MTU 37,4 b

12. Edition

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR

Komb.-Nr. 0 406 039 109

Replaces 2.83 Firm MTU

Governor adjustement according to VDT-I-420/112 Engine MB 838 Ca M

1-2-9-10-3-4-5-6-7-8 $0-45-72-117-144-189-216-261-288-333^{\circ} \stackrel{+}{-} 0,5^{\circ} (\stackrel{+}{-} 0,75^{\circ})$ 

Note VDT-W-Gen./7
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,0-2,1 .95-2,15) mm (from BD&) ] Port closing at prestroke Spring pre-tension Fuel delivery Difference Fuel delivery Rotational Control-(torque-control valve) Checking values in fuel delivery Average value rod travel speed cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes cm3/1000 strokes min : 1 mm 370,0-381,0 373.0-378.0 11,0 (16,0) 18.0 600 143,0-163,0 138,0-168.0 14,0 (21,0) 600 9,0 66,0-96.0 14,0 (21,0) 200 9,0 71,0-91,0 9,0 (14,0) C, Sp. 2 1080 C, Sp. 5 11,0 (16,0) 900/550

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

max. 600 18,0-18,5 (Position of 1100 16,5-16,7 1150 12,0-14,6 1200 7,0-10,8 1250 2,0-6,4 1350 0-1,0 1200 1350 0-1,0 1200 1350 0-1,0 1200 0-1,0 1200 0-1,0 1200 0-1,0 1200 0-1,0 1200 0-1,0 1200 0-1,0 1200 0-1,0 17,6-18,0 900 16,8-17,0-18,0 900 16,8-17,0-18,0 900 16,8-17,0-18,0 900 16,8-17,0-18,0 900 16,5-16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0 900 16,0	Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	Control- rod travel mm	Lower rat Control lever de- flection degrees 7	min- 8	t Control- rod travel mm 9	min-1	e control Control- rod travel mm
		1100 1150 1200 1250	18,0-18,5 16,5-16,7 12,0-14,6 7,0-10,8 2,0-6,4		1100	2-1,1	150 350 425 500	6,5-18,0 10,2-12,6 5,3-5,8 1,5-3,5	900	16,8-17,2

Torque control travel a \_0.35 \_\_\_0,03 Speed regulation At 1130 mg

C. Settings for fuel-injection pump with fitted governor

Starting fuel Fuel-delivery Control rod stop Full-load delivery delivery characteristics at speed on governor control lever (Test oil temperature 40°) cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes min min cm³/1000 strokes min 6 18,0-18,2 mm RW 305,0-313,0 100 900 1080 316,0-320,0 (301,0-317,0) (313,0-323,0)271,0-279,0 425 51.0-57.0 550 (267,0-283,0)RW max. 5 mm 1220

Checking values in brackets

Shutoff solenoid 0,5 - 1,5 mm in front of stop

WPP 001/4 MTU 29,9 e 1

2. Edition

Replaces

PE 8 ZWM 150/120 RS 1036 RQU 300-500/1150 ZWA 66 R

Firm: Engine

0 406 038 025 governor adjustment according to VDT-I-420/112

5.83 MTU

1-2-6-3-4-5-7-8 each 45° ( + 0,75°)

MB 837 Türkei

Stamp prestroke dimension on top side of pump! Note VDT-W-Gen./7! All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

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Rotational	Control-	(2,45-2,65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min <sup>-1</sup>	mm	cm³/1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>-1</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	527,0-537,0	14,0 (21,0)	524,0-540,0	-
1000 300 1150 700 425	9,0 9,0 11,5 12,5	175,0-195,0 104,0-124,0 Section C	12,0 (18,0) 16,0 (24,0) 12,0 (18,0) 16,0 (24,0) 12,0	170,0-200,0 99,0-129,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min 1 2	Control- rod travel mm min <sup>1</sup> 3	Control lever flection degrees 4	min 1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min ' 8	Control- rod travel mm 9	min ' 10	Control- rod travel mm 11
ca. 65	800	18,0-18,5	ca.19	300	7,0	ca.33	425	6,6-6,9	1100	10,0
	1150 10,7 5,0 0	11,5 1210-1230 1255-1280 1295-1315	ca.39	500	7,0		300 400 500 535	13,0-15,0 7,8- 9,0 1,0- 3,3 0 - 0,5	Pre	10,8+0,2 liminary mination

Torque control travel  $a = 0.5 \cdot mm + 0.05$ 

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	CONNECT XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Fuel-de charact		Idle speed		
min 1	cm <sup>3</sup> /1000 strokes	Shutoff solenoid min ' 3	min <sup>1</sup>	cm <sup>3</sup> /1000 strokes 5	min '	cm³/1000 strokes 7	
1150	285,0-289,0 (283,0-291,0)	0,5, 1,5mm in front of stop	700	295,0-305,0 (292,0-3,0,0)	425	53,0-59,0	
				*			

\* Limit the quantity at the exess-fuel stop

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WPP 001/4MTU 22,4 d

2. Edition

PE 6 ZWM 150/120 RS 1031/11 Komb.-Nr. 0 406 036 031

RQU 425/1200 ZWA 63 R

Replaces 3.83
Firm: MTU

VDT-I 420/112; VDT-W-Gen./7

Engine: MB 833-TAM

1 - 2- 3 - 4 - 5 - 6 Please note instructions on sheet 2 0 -45-120-165-240-285°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

mm (from BDCZV1. 6 Port closing at prestroke (2,45-2,65) Spring pre-tension Fuel delivery Difference **Fuel delivery** Control-Rotational (torque-control valve) Checking values in fuel delivery rod travel Average value speed cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes min-1 mm 520,0-536,0 523,0-533,0 16,0 (24,0) 18,0 1000 171,0-201,0 13,0 (19,9) 176.0-196.0 1000 9.0 14,0 (21,0) 108,0-138,0 113,0-133,0 300 9.0 10,0 (15,0) 1200 Sp. 2 11,9 16,0 (24,0) 800 9,0 425

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor settings

Upper rated Control lever deflection degrees	speed PMm min-1 2	Control- rod _1 MWei mm min-1	Medium ra Control lever flection degrees 4	min=1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ea speei min-: 8	Control- rod travel mm 9	mın~'	Control- rod travel mm
max.	1200	18,0-18,5	-	-	-	ca.23	425	6,5		•
	10,9 5,0 0	1220-1235 1250-1300 1320-1370					200 400 600 1200 1275	14,8-18,0 7,6-8,1 0,5-1,5 0,5-1,5		

Torque control travel a =

mm

Speed regulation: At 1225-1240 minmless control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact	• . ,	delivery Leerlauf		
(Test oil temperature 40°) min : cm³/1000 strokes		min '	min :	cm³/1000 strokes 5	min ·	cm <sup>3</sup> /1000 strokes 7	
1200	297,0-301,0 (295,0-303,0)	-	800	282,0-315,0 (278,0-319,0)	425	52 <b>,0-</b> 66,Q	

Checking values in brackets

- When testing the injection-pump combination, the oil-metering valve must be unscrewed to prevent destruction by running dry.
- 2. Set stop screw at 1 mm.
- 3. Set shutoff device to 0.5 1.5 mm

Testoil-ISO 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 22,4 d 1

2. Edition

ROU 425/1200 ZWA 63 R

Replaces 3.83

Komb.-Nr. 0 496 036 033

PE 6 ZWM 150/120 RS 1031/11 Z

Engine: MB 833 - TAM

1- 2- 3 - 4 - 5 - 6 0-45-120-165-240-285° ± 0,5° (± 0,75°)

VDT-I-420/112; VDT-W-Gen./7 Please note instructions on sheet 2 AW test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump\_settings

Port closing at prestroke (2.45-2.65)

mm (from BDE) 1. 6

Rotational speed	Control- rod travel	Fuel delivery Average value cm3/1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000 1000 300 1200 800 425	18,0 9,0 9,0 13,2	523,0-533,0 176,0-196,0 113,0-133,0 C Sp. 2	16,0 (24,0) 13,0 (19,0) 14,0 (21,0) 11,0 (16,0) 16,0 (24,0) 9,0	520,0-536,0 171,0-201,0 108,0-138,0 C Sp. 2	-

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm mm mm min~1	Control- rod 1 misnel 1 mm min-1	Medium ra Control lever flection degrees 4	min-1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7		Control- rod travel	·min-'	e control  Control-  rod  travel  mm  11
max.	<del></del>	18,0-18,5 1225-1240	-	-	-	ca.23	1	6,5 15,0-18,0	-	-
		1280-1325 1290-1335 1320-1375					400 600 1200 1275	7,1-9,0 0,5-1,5 0,5-1,5 0		

Torque control travel a =

mm

Speed regulation: At 1225-1240 milyma less control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		deliver	9
min' '	cm <sup>3</sup> /1000 strokes	min <sup>-1</sup>	min 1	cm³/1000 strokes 5	min 6	cm <sup>3</sup> /10 <b>9</b> 0 strokes 7
1200	345,0-349,0 (343,0-351,0)	-	800	343,0-353,0 (340,0-356,0)	425	52,0-66,0

Checking values in brackets

11.83

**BOSCH** 

- When testing the injection-pump combination, the oil-metering valve must be unscrewed to prevent destruction by running dry.
- 2. Set idle stop at  $n = 425 \text{ min}^{-1}$  at 6.5 mm control-rod travel.
- 3. Set stop screw at 1 mm.
- 4. Set shutoff device to 0.5 1.5 mm.

# Test specifications Fuel injection pumps wpp 001/4 MTU 29,9 e and governors

2. Edition

PE 8 ZWM 159/120 RS 1036 RQU 300-500/1100 ZWA 66 R

Replaces 5.83 Firm:

0 406 938 025 governor adjustment according to VDT-I-420/112

MTU Engine: MB 837 Italien

1-2-6-3-4-5-7-8 each 45° ( + 0,75°)

Stamp prestroke dimension on top side of pump! Note VDT-W-Gen./7!

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings cv1.8 Port closing at prestroke (2.45-2.65) mm (from BDC)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension
speed min : 1	rod travel mm 2	Average value cm <sup>3</sup> /1000 strokes 3	in fuel delivery cm <sup>3</sup> /1000 strokes 4	Checking values cm <sup>3</sup> /1000 strokes 5	(torque-control valve)
1000 1000 300 1100 700 425	9,0 9,0 9,0 12,3 12,6 6,7	527,0-537,0 175,0-195,0 104,0-124,0 C, col.2+5 C, col.7	14,0 (21,0) 12,0 (18,0) 16,0 (24,0) 14,0 (21,0) 18,0 (27,0) 12,0	524,0-540,0 170,0-200,0 99,0-129,0 C, col.2+5	-

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

	Upper rated speed		Medium rated speed			Lower rat	led spee	d	Torqu	e control
Control lever deflection degrees 1	mm	Control- rod travel min 1 3	Control lever flection degrees 4	min 1	Control- rod travel mm 6	Control lever de- flection degrees 7	min †	Control- rod travel mm 9	min 1	Control- rod travel mm
ca.65	800	18,0-18,5	ca.19	300	7,0	ca.33	425	6,6-6,9	1100	1
	1100 11,3 5,0 0	1135-1145	ca.39	500	7 <b>,</b> 0		300 400 500 535	13,0-15,0 7,8- 9,0 1,0- 3,3 0 - 0,5	Prel	10,8+0,2 iminary ination
					•					

Torque control travel  $a = 0.5 \cdot mm + 0.05$ 

Speed regulation: At

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Shutoff solenoid	Fuel-de charact			Idle speed
min-1 1	cm³/1000 strokes 2	min 1 3	min ¹ 4	cm³/1000 strokes 5	min '	cm³/1000 strokes 7
1100	302,0-306,0 (300,0-308,0)	0,5-1,5 mm in front of stop	700	308,0-318,0 (305,0-321,0) *	425	51,0-61,0
	* Limit the qua	ntity at the exess-1	uel s	op.		

Checking values in brackets

6

Testoil-ISO 4113

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 Volvo 3,6 n 1. Edition

En

VE 6/11 F 1800 L 18-3

0 460 416 027

supersedes -

company: VOIVO

TD 40 A (93 kW)

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3

3 1

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply pump pressure	1500	6,6-7,2	bar (kgf/cm²)		! ! :
₹.3 Full-load delivery without charge-air pressure	1500	62,0-63,0	cm <sup>3</sup> /1000 strokes	; ; ;	2,5 (3,0)
Full-load delivery with	-	-	cm <sup>3</sup> /1000 strokes	<b>1</b>	1
charge-air pressure  1.4 Idle speed regulation	325	8,0-12,0	cm <sup>3</sup> /1000 strokes	•	2,5 (3,0)
1 5 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes	• • • • • • • • • • • • • • • • • • •	,
1.6 Full-load speed regulation	2000	19,0-25,0	cm <sup>3</sup> /1 <b>000</b> strokes	!	
1.7 Load-dependent start of delivery				:	

2.1 Timing device	uw u = tea/wiu	1100 1,6-2,4(1,	3-2,7) (	1500 (3,1-4,5)	180 4,5 <b>-</b> 5,3	0 (4,2-5,6)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,8-3,4			180 7,7-8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-	153)		180 55-138(4	
2.3 Fuel deliveries					3. Dimer	18i0n8- for assembly and adjustment
Speed control lever	Rot. speed rev/min_	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	mm
End stop	2100 2000 1900 1800	max. 2,0 39,0-49,0 56,3-59,3	(17,0-27,0) (39,0-49,0) (55,55-60,05	50	K KF	<b>-</b> 5 <b>,9-</b> 6 <b>,</b> 2
	1500 500 500		(60,25-64,75 (48,25-53,75	51)	MS SVS	1,2-1,4 max.4,7
switch-off			·		X Ks.	20,2-22,2
					ΧιΒ	10,4-16,4
Idle stop	400 325	max. 3,0	(6,0-14,0)		Observations	
End stop	110 220	min. 60 max. 40				
2.4 Salenaid	max. cut-in volti	xxx min.				

E6

6

# Test Specifications Distributor-type Fuel-injection Pumps

40

WPP 001/4 Vol 3,6 g1 3. Edition

Ēn

supersede5.83 company: VO1VO

engine: TAMD 40 B (121 kW)

VE 6/11 F 1800 L 19-7

0 460 416 025

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

 $\pm$  0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bas (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,6- 3,0	mm	!	
1 2 Supply pump pressure	1500	6,2-6,8	bar (kgf/cm²)	<b>!</b> ::	
1.3 Full-load delivery without charge-air pressure	1500	78,0-79,0	cm <sup>3</sup> /1000 strok <del>as</del>	1	3,0(3,5)
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	· · · · · · · · · · · · · · · · · · ·	1
1.4 idle speed regulation	400	8,5-12,5	cm <sup>3</sup> /1000 strokes		3,0(3,5)
1.5 Start	100	min.60	cm <sup>3</sup> /1000 strokes	· · i	
t 6 Full-load speed regulation	1900	43,5-49,5	cm <sup>3</sup> /1000 strokes	; 	
1.7 Load-dependent start of delivery		-			1

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	1000 0,7-1,5(0,4-1,8)	1500 (2,1-3,5)	1750 3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9		1750 7,1-7,7
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		1800 55-138(40-153)
	<del></del>	·	-	3 Dimensions

	cm <sup>3</sup> /10 s	55-138(40-153)		33-130(40	-133)
2.3 Fuel deliveries				3. Dimen	SiO(18) for assembly and adjustment
Speed control lever	Rot. speed rev/min		Charge-air press bar (kgf/cm²)	Designation	mm
End stop	2130 2050 1900 1770 1500 600	max. 2,5 6,5-12,5(5,0-14,0) 72,8-75,8 (71,6-77,0) (75,8-81,2) 68,0-72,0 (66,6-73,4)		K KF MS SVS	5,9-6,1 0,9-1,1 max. 2,3
switch-off				ХК В XL	18,7-20,7
Idle stop	580 500 400 120 220	0 max. 2,0 (6,0-15,0) min.60 max.60		Observations	
2.4 Salenoid	max. cut-in volt	19V	•		

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# **Test Specifications** Distributor-type Fuel-injection Pumps

2. Test Specifications checking values in brackets (

max. cut-in voltage

WPP 001/4 Vol 3,6p

1. Edition

VE 6/11 F 1625 L 19-9

0 460 416 030

company: Volvo-Penta

engine: TAMD 40 B - 105 kW

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

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Pre-strake setting Ug 2	mm			<del></del>	<del></del>
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,6-3,0	mm		<u>;</u> <u>.</u>
1.2 Supply pump pressure	1500	6,2-6,8	bar (kgf/cm²)	<u>.</u>	1
1.3 Full-load delivery without	1500	72,5-73,5	cm <sup>3</sup> /1000 strokes	; ; ;	3,5
charge-air pressure Full-load delivery with	-	-	cm <sup>3</sup> /1000 strokes	:	
charge-air pressure 1.4 Idle speed regulation	400	8,5-12,5	cm <sup>3</sup> /1000 strokes	i i	3,5
1.5 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1900	15,0-23,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-	4 4			
i e e e e e e e e e e e e e e e e e e e	•	·		<del> </del>	

Z, lest spe		Cliganing raises in a				
2.1 Timing device	n = rev/min	1000 0,7-1,5(0	,4-1,8)	1500 (2,1-3,5)		525 (2,7-4,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,	9		16 6,7-	525 -7,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40	)-153)			525 3(40-153)
2.3 Fuel delivenes Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimer	SionS for assembly and adjustment mm
End stop  switch-off	1900 1900 1800 1625 1500 600	max. 10,0 32,5-38,5 66,0-69,0 72,5-73,5 58,0-62,0	(14,5-23,5) (31,0-40,0) (64,8-70,2) (70,3-75,7) (56,7-63,4)		K KF MS SVS	- 5,9-6,1 0,9-1,1 max.4,9
Idle stop	580 500 400 110 210	0 max. 2,0 min. 60,0 max. 50,0	(6,0-15,0)		Observations Pushing magnet	electro-

€8

2.4 Solenoid

xxx min. 10,0 V

xxxxxxxxx rated voltage 12V.

6

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2.4 k

1. Edition

VE 6/10 F 2400 L 32-2

2. Test Specifications

2.1 Timing device

n = rev/min

0 460 406 037

supersedes

company: VWW engine: 087/10

Overflow temperature 45° C

1500

All test specifications are valid only for Boach Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

SALW-460/

2400

Testoil-ISO 4113

mm			300 VD 1-VV-007.		
Rot. speed rev/min	Settings		Charge-air press. bar (kg//cm²)-	Difference in delivery cm <sup>3</sup>	
1500	2,8-3,2	mm	İ	! ! !	
1500	5,2-5,8	bar (kg//cm²)	!	1	
1500	28,5-29,5	cm <sup>3</sup> /1000 strokes	1	2,5	
-		cm <sup>3</sup> /1009 strakes	i i	2.0	
375	6,0-1,0	cm <sup>3</sup> /1000 strokes	!	2,0	
100	min. 38,0	cm <sup>3</sup> /1000 strokes	: ! !	•	
2700	6,0-12,0	cm <sup>3</sup> /1000 strokes			
-	İ		: !		
	Rot. speed rev/min  1500 1500 1500 - 375 100	Rot. speed rev/min  1500  2,8-3,2  1500  5,2-5,8  1500  28,5-29,5  -  375  6,0-1,0  min. 38,0	Rot. speed rev/min  1500  2,8-3,2  1500  5,2-5,8  bar (kg//cm²)  28,5-29,5  cm³/1000 strokes  cm³/1000 strokes  6,0-1,0  min. 38,0  cm³/1000 strokes	Rot. speed rev/min Settings Charge-air press. bar (kgl/cm²).  1500 2,8-3,2 mm  1500 5,2-5,8 bar (kgl/cm²)  1500 28,5-29,5 cm³/1000 strokes  - cm³/1000 strokes  - cm³/1000 strokes  100 min. 38,0 cm³/1000 strokes	

checking values in brackets (

	mm	0,8-1,6 (0,5-1,9) (2,3)	(-3,7) $(6,0-6)$	5,8 (5,7 <del>-</del> 7,1	)		
2.2 Supply pump	n = rev/min	600		2400	)		
	bar (kgf/cm²)	2,8-3,4 7,7-8,3					
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2400 55-138			
2.3 Fuel deliveries		339136 (40-133)		3. Dimen	SIONS for assembly		
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. ber (kgf/cm²)	Designation	and adjustment mm		
End stop  switch-off	2800 2700 2400 1500 750	max. 40 (5,0-13,0) 22,0-24,0 (20,7-25,3) (26,7-31,3) 26,0-29,0 (24,5-30,5)		K KF MS SVS	3,2-3,4 6,4-6,6 1,5-1,7 3,6		
idle stop End stop	375 600 400 500	(4,0-12,0) max. 4,0 min. 20,0 max. 25,0		Observations			
2.4 Solenoid	max. cut+n voltag	* xxx min. 10 V rated voltage 12V.					

6

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k 2

Edition

VE 6/10 F 2400 L 32-3

0 460 406 038

supersedes company VW

087/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting	mm			369 401-44-4007.		
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1500	2,8-3,2	mm	<b>,</b>		
1.2 Supply pump pressure	1500	5,2-5,8	bar (kgt/cm²)		1	
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes	:	2,5	
Full-load delivery with	-		cm <sup>3</sup> /1000 strokes			
charge-air pressure  1.4 Idle speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes	:	2,0	
1.5 Start	100	min. 38	cm <sup>3</sup> /1000 strokes	:	İ	
1.6 Full-load speed regulation	2700	6,0-12,0	cm <sup>3</sup> /1000 strokes			
1.7 Load-dependent start of delivery	-					
				i	<u> </u>	

	T	checking values in brackets (	1500	2400	•
2.1 Timing device	n = rev/miñ mm	0,8-1,6 (0,5-1,9		5,0-6,8 (5,7	·-7.1)
2.2 Supply pump Overflow delivery	n = rev/min bar (kgf/cm²)  n = rev/min cm³/10 s	600 2,8-3,4 600 55-138 (40-153)	,, (2,0 0,7)	2400 7,7-8,3 2400 55-138 (40-	
2.3 Fuel delivenes		33-136 (40-133)		3. Dimer	
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgl/cm²)	Designation	and adjustment
End stop	2800 2700 2400 1500 750	max. 4,0 (5,0-13 22,0-24,0 (20,7-2 (26,7-3 26,0-29,0 (24,5-3	25,3) 31,5)	K KF MS SVS	3,2-3,4 6.4-6,6 1,5-1,7 3,6
swich off elektr. mech.	70-400 2400	0 0		A 8	
Idle stop  End Stop	600 375 400 500	max. 4,0 (4,0-12 min. 20,0 max. 25,0	2,0)	Observations	
2.4 Solenoid	max. cut-in volta	xxx min. 10,0 V rated voltage 12V.	,		7 04

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# Test Specifications Distributor-type Fuel-injection Pumps

46

NPP 001/4 VWW 1,6u

4. Edition

En\_

VE 4/9 F 2106 R 48 0 460 494 039 supersede9.82 company VWW engine: EA 162/1,6

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air-press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,3- 3,7	mm	:	:
1.2 Supply pump pressure	1500	4,8- 5,4	bar (kgl/cm²)		•
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes	•	2,5(3,0)
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	;	:
1.4 Idle speed regulation	415	6,0-10,0	cm <sup>3</sup> /1000 strokes	:	2,0(3,0)
1.5 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes		•
1.6 Full-load speed regulation	2300	11,5-17,5	cm <sup>3</sup> /1000 strokes		<u>!</u> !
1.7 Load-dependent start of delivery	-	-			

2. Test Spe	cifications	checking values in brackets ( )		
2.1 Timing device	n = rev/min	1000 1,2-2,0(0,9-2,3)	1500 (2,8-4,2)	2100 5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,7		2100 6,3-6,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2100 55-138(40-153)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery	Charge-air press !	3. Dimensions Ior assembly and adjustment mm
End stop	2450-2550 2400 2300 2100 1500 600	0 max. 5,5 (10,5-18,5) 28,0-30,0 (26,7-31,3) (31,2-35,8) 21,5-24,5 (20,0-26,0)		x 3,2-3,4 5,7-5,9 ms 1,3-1,5 max. 4,8 + FH 1,8-2,4
switch-off elektr.	400	0		xx 18,6-20,6 XL 7,5-10,8
idle stop	2000 450 415	max. 3,0 min. 2,0 (4,0-12,0)		Observations + *operating
End stop	400 500	min. 17 max. 23		stroke (KSB)
2.4 Solenoid	max. cut+n voltag	xxx min. 10,0 V		

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# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6t

3. Edition

supersede 10.82 company VWW

engine: Typ 2 USA

VE 4/9 F 2100 R 48-2 (P)

0 460 494 102;

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see-VDT-W-460/...

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,3- 3,7	mm		1
1 2 Supply pump pressure	1500	4,8-5,4	bar (kgf/cm²)		: r
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes	•	2,5(3,0)
Full-load delivery with	; -	•	cm <sup>3</sup> /1000 strokes		į
charge-air pressure 1.4 idle speed regulation	415	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0(3,0)
1.5 Start	100	min. 35,0	cm <sup>3</sup> /1000 strakes	· •	į
1.6 Full-load speed regulation	2300	11,5-17,5	cm <sup>3</sup> /1 <b>000 strokes</b>	!	
1 7 Load-dependent start of delivery	•	•			:

2. 1 <del>est Spe</del>	citications	checking values in	brackets ( )			
2.1 Timing device	ww u = tek/win	1000 1,2-2,0(0,	9-2,3)	1500 (2,8-4,2)		100 2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 21,-2,7			2 6,3-6,	100 9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40	-153)		-	100 (40-153)
2.3 Fuel deliveries		<u></u>		:	3. Dimer	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2450-2550 2400 2300 2100 1500 600	max. 5,5 28,0-30,0 21,5-24,5	0 (10,5-18,5) (26,7-31,3) (31,2-35,8) (20,0-26,0)		K KF MS SVS + FH XK XL	3,2-3,4 5,7-5,9 1,3-1,5 max.4,8 1,8-2,4 18,6-20,6 7,5-10,8
switch-off elektr.	400	0			8	
idle stop	2000 450 415	max. 3,0 min. 2,0	(4,0-12,0)		Observations + *oper	ating
End stop	400 500	min.17 max.23			stro	ke (KSB)
2.4 Solenoid	max. cut-in voltage	xxx min.	10,0 V ge 12V.			

BOSCH

Testoil-ISO 4113

WPP 001/4 PEU 2,3 b 3

Edition

VE 4/10 F 2075 R 62

0 460 404 011

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C Test pressure line

6x2x450 mm / 1 680 750 073

supersedes Peugeot company: XD Z S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

03.84

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. spaed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	5,2- 5,6	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with	1250	47,5-48,5	cm³/1000 strokes	0,67	2,0(3,0)
charge-air pressure  Full-load delivery without	500	36,0-37,0	cm³/1000 strokes	0	
charge-air pressure  1.4 Idle regulation	375	12,0-16,0	cm <sup>3</sup> /1000 strokes	. 0	2,0(3,0)
1.5 Full-speed regulation	2400	12,0-18,0	cm <sup>3</sup> /1000 strokes	0,67	
1.6 Start	100	min. 57,0	cm³/1000 strakes	0	
1.7 Load-dependent port-closing	1400	-		0,67	

2. Test Spec	ifications	checking values in brackets (	)			
2.1 Timing device LDA=0,67 bar	n = rev/min mm	750 1,7-2,5 (1,4-2,8)	(4	1400 ,7-6,1)	200 7,9-8,7(7,	-
2.2 Supply pump LDA=0,67 bar	u = ten/wiu	400 2,1-2,7			200 7,1-7,	-
Overflow delivery	n = rev/min cm³/10 s	500 (0 bar) 55-138 (40-153)	-		2075 55-138 (40	(0,67 bar) -153)
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery		Charge-air press.	3. Dimens Designation	sions for assembly and adjustment mm
End stop	2500 2400 2000 1250 *750 500	5,0-11,0 ( 4,0-1 (11,0-1 45,0-48,0 (44,2-4 (45,7-5 45,5-46,5 (43,0-4 (33,5-3	9,0) 8,8) (0,3) (9,0)	0,67 0,67 0,67 0,67 0,25 0	K KF MS SVS	Maß K 1 5,7-5,9 0,9-1,1 max.4,6
switch-off	2075	0			a XK B XL	20,2-22,2
Idle stop  End stop	375 420-480 1250 320 420	(10,0-1 0 max. 2,0 min. 52 max. 52	8,0)		Manifold-p compensate = 3,5 mm Correction	or stroke o at the
2.4 Solenoid	mex. cut-in voltage	xxx min. 10 V			adjusting	nut. (46)

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# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b 2

Edition

VE 4/10 F 2125 R 62-2

0 460 404 018

DHK: 1 688 901 022/130 bar

6x2x450 mm / 1 680 750 073 Overflow temperature 45° C Test pressure line

supersedes Peugeot company: XD 2 S 81A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting	mm	mm			see VDT-W-460/	
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference.in delivery cm <sup>3</sup>	
,	1400	5,2-5,6	mm	0,67		
1.1 Timing device travel	1400	5,2-5,8	bar (kgl/cm²)	0,67		
1.2 Supply-pump pressure	1250	47,5-48,5	cm³/1000 strokes	0,67	2,0(3,0)	
1.3 Full-load delivery with charge-air pressure Full-load delivery without	500	36,0-37,0	cm³/1000 strokes	0		
charge-air pressure	425	12,0-16,0	cm³/1000 strokes	0	2,0(3,0)	
1.5 Full-speed regulation	2450	12,0-18,0	cm <sup>2</sup> /1000 strokes	0,67		
1.6 Start	100	min. 57,0	cm³/1000 strokes	0		
1.7 Load-dependent port-closing	1400	-		0,67		

2. Test Spec	ifications	checking values in brackets (	)	<del></del>	
2.1 Timing device LDA=0,67 bar	n = rev/min mm	750 1,7-2,5 (1,4-2,8) (4	1400 1,7-6,1)	2000 7,9-8,7(7,6-	
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm²)	400 2,1-2,7		2000 7,1-7,7	0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 55-138 (40-153)		2125 (0 55-138 (40-	0,67 bar) 153)
2.3 Fuel deliveries				3. Dimens	Sions- tor assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop , switch-off	2550 2450 2000 1250 *750 500	5,0-11,0 ( 4,0-12,0) (11,0-19,0) 45,0-48,0 (44,2-48,8) (45,7-50,3) 45,5-46,5 (43,0-49,0) (33,5-39,5)	0,67 0,67 0,67 0,67 0,25 0	K KF MS SVS	Maß K 1 5,7-5,9 0,9-1,1 max.4,5
	2125	0		B XL	9,5-12,8
Idle stop	425 460-590 1250 320 420	(10,0-18,0) 0 max. 2,0 min. 52 max. 52		Observations  Manifold-proceedings  = 3,5 mm  Correction adjusting	or stroke n at the
2.4 Solenoid	max. cut-in voltag				
<b>{</b>	tactuoltage v viv	rated voltage 12V.		ł	

E14

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b

2. Edition

VE 4/10 F 2075 R 62-3

0 460 404 021

Overflow temperature 45° C

supersedes 11.82 company: Peugeot

XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

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see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing days from	1400	5,0-5,4	mm	0,67	
1.1 Timing device travel	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.2 Supply-pump pressure	1200	48,7-49,7	cm <sup>2</sup> /1000 strokes	0,67	1
1.3 Full-load delivery with charge-air pressure	500	33,5-34,5	cm³/1000 strokes	0	3,0
Full-load delivery without charge-air pressure	375	12,0-16,0	cm³/1000 strokes	0	2,5
1.4 Idle regulation	2400	13,0-19,0	cm <sup>3</sup> /1000 strokes	0,67	
1.5 Full-speed regulation 1.6 Start	100	min. 50	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	1400	-			

2.1 Timing device	n = rev/min	750 1,4-2,2(1,	1_2 5)	1400 (4,5-5,9)		)00 (7,5 <b>-</b> 8,9)
DA=0,67 bar	mm	1,4-2,2(1,	1-2,57	(4,5-5,3)	7,0-0,0(	
2.2 Supply pump	n = rev/min	400 2.1-2.	7			000 1-7,7
DA=0,67 bar	bar (kgf/cm²)	2,1-2,			/,	-/,/
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40	-153)			)75 3(40 <b>–</b> 153)
2.3 Fuel deliveries	<del></del>				3. Dimer	tor assembly
Speed control lever	Rot. speed <sub>e</sub>	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2500 2400	3,0-9,0	(2,0-10,0) (12,0-20,0)		к	Maß K 1
	2000	41,8-44,2	(40,7-45,3)	0,67	KF	5,7-5,9
	1250 * 750	39,5-40,5	(46,9-51,5) (37,7-42,3)	0,67 0,25	MS	0,9-1,1
	500		(31,0-37,0)	0	svs	max. 4,6
switch-off	2075	0			XL	20,2-22,2
	2075	0			χ̈́L	9,5-12,8
die stop	375		(10,0-18,0)		Observations #	
	420-480 1250	0 max. 2,0				d-pressure
ind stop	300 420	min. 50 max. 40			= 3,5 m Correct	ator stroke m 10n at the ng nut. (46

www.xxx rated voltage 12V.

2. Edition

En

I-ISO 4113

VE 4/10 F 2125 R 62-4 Overflow temperature 45° C 0 460 404 022

supersedes 11.82 company: Peugeot engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting = mm

1. Settings	Rot. speed	Settings		Charge-air press. bar (kgt/cm²)	Difference in delivery cm <sup>3</sup>
	1400	5,0-5,4	mm	0,67	
1.1 Timing device travel	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.2 Supply-pump pressure	1250	48,7-49,7	cm³/1000 strokes	0,67	
1.3 Full-load delivery with charge-air pressure	500	33,5-34,5	em³/1000 strokes	0	3,0
Full-load delivery without charge-air pressure	425	8,0-12,0	cm <sup>3</sup> /1000 strokes	0	2,5
1.4 Idle regulation	2425	17,0-23,0	cm <sup>3</sup> /1000 strokes	0,57	
1.5 Full-speed regulation	100	min. 50	cm³/1000 strokes	0	
1.6 Start  1.7 Load-dependent port-closing	1400	-			

2. Test Spec	ifications	checking values in brackets (	)	
2.1 Timing device LDA=0,67 bar	n = rev/min	750 1,4-2,2(1,1-2,5)	1400 (4,5-5,9)	2000 7,8-8,6(7,5-8,9)
2.2 Supply pump n = rev/min bar (kgf/cm²)  Overflow delivery n = rev/min cm³/10 s		400 2,1-2,7		2000 7,1-7,7
	500 55-138(40-153)		2125 55-138(40-153)	
	<u> </u>			3 Dimensions

	i	i		
2.3 Fuel delivenes				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550 2425 2000 1250 * 750 500	41,8-44,2	(4,0-12,0) (16,0-24,0) (40,7-45,3) (46,9-51,5) (37,7-42,3) (31,0-37,0)	0,67 0,67 0,67 0,67 0,25 0
switch-off	2125	0		
Idle stop	425 460-590	o	(6,0-14,0)	
End stop	300 420	min. 50 max. 40		
2.4 Solenoid	mex. cut-in volts	ye xxx min.		

3. Dimer	for assembly and adjustment			
К	Maß K 1			
KF	5,7-5,9			
MS	0,9-1,1			
svs	max.4,5			
<b>A</b> K	20,2-22,2			
<b>教L</b>	9,5-12,8			

### Observations

7

Manifold-pressure compensator stroke = 3,5 mm Correction at the adjusting nut. (46)

**Festoil-ISO 4113** 

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5c

2. Edition

supersedes company Bukh
DV 36 TME

VE 3/10 F 1800 L 70 0 460 403 004

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

0,2 mm see VDT-W-460/ ...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device trave/	1200	2,9- 3,3	mm	0,65	:
1.2 Supply pump pressure	1200	5,1- 5,7	bar (kgf/cm²)	0,65	
1.3 Full-load delivery without	600	31,0-33,0	cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
charge-air pressure Full-load delivery with	1200	45,0-47,0	cm <sup>3</sup> /1000 strokes	0,65	
charge-air pressure 1.4 Idle speed regulation	450	5,5- 9,5	cm3/1000 strokes	0	2,5(3,0)
1.5 Start	100	min. 35,0	cm³/1000 strokes	0	;
1.6 Full-load speed regulation	1850	20,0-26,0	cm <sup>3</sup> /1000 strokes	0,65	! •
1.7 Load-dependent start of delivery					

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	900 1,1-1,9(0,8-2,2)	1200 (2,4-3,8)	1600 5,0-5,8(4,7-6,1)
2.2 Supply pump	n = rev/min ber (kgf/cm²)	200 0,8-1,4		1800 8,0-8,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1800 55-138(40-153)
	i	<u></u>		

		<u> </u>		
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)
End stop	max. 2000 1900 1850 1800 1200 + 600	43,2-43,3	(1,0 - 9,0) (19,0 -27,0) (41,05-45,45) (43,8 -48,2) (34,5 -40,5) (29,0 -35,0)	0,65 6) 0,65 0,65 0,27
switch-off	1800	0		
Idle siop	450		(3,5-11,5)	0
	480 530	min. 1,5 max. 1,5		0
End stop	450 580	min.38,0 max.36,0		
2.4 Solenoid	max. cut-in voltag	xxx min	10,0 V ge 12V.	

3. DIMEI	tor assembly and adjustment
к	-
KF	5,9- 6,1
MS	0,7-0,9
svs	max. 4,2
ŧк	20,2-22,2
в XL	12,5-15,8

Manifold-pressure compensator stroke  $= 4.0 \, \text{mm}$ Correction at the adjusting nut. (46)

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# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 Ope 1,6 d

4. Edition

superseden .83 company Opel

engine: 2033-1,6 1

VE 4/9 F 2300 R 82 0 460 494 071

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -	mm	mm .			
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgt/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm		i
1 2 Supply pump pressure	1500	5,0-5,6	bar (kgt/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes	• • • • • • • • • • • • • • • • • • •	2,5
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	450	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5
1 5 Start	100	min. 40,0	cm <sup>3</sup> /1000 strokes		i !
1 6 Full-load speed regulation	2640	17,0-23,0	cm <sup>3</sup> /1000 strckes		
1.7 Load-dependent start of delivery	1500 **	· . •		• • •	•

2. Test Specifications		checking values in brackets (	)		
2.1 Timing device	n = rev/min .mm	1200 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2300 6,8-7,6(6,5-7,9)	
2.2 Supply pump	n = rev/min bar (kgt/cm²)	600 2,4-3,0		2300 7,3-7,9	
Overflow delivery n = rev/min cm <sup>3</sup> /10 s		500 55-138(40-153)	2300 55-138(40-15		

2.3 Fuei delivenes					3. Dimensions: for assembly	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	3000 2800	max. 5,0 7,0-13,0	(6,0-14,0)	:	. <b>K</b>	3,2-3,4
	2640	•	(16,0-24,0)	•	KF	5,7-5,9
	2300 1500	27,4-29,4	(26,1-30,7) (26,7-31,3)	:	MS	1,2-1,4
	600	23,2-26,2	(21,7-27,7)	:	sigs * Fil	max.2,0 1,8-2,4
switch-off	2300	0			a X·K	24,2-26,2
	2300	: • • • • • • • • • • • • • • • • • • •			вХ₹	9,9-13,2
idle stop	1200	0		<del></del>	Observations	

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End stop

2.4 Solenoid

650

450 400

500

max. cut-in voltage

2,0-7,0

min. 30

max. 28

wxxxxxxxx rated voltage 12V.

xxx min. 10 V

(0,5-8,5)

(0,5-8,5) (4,0-12,0) \* operating stroke (KSB) \*\*As of FD 349 (9.83) no setting of

load-dependent start of delivery point.

6

# **Test Specifications** Distributor-type **Fuel-injection Pumps**

2. Test Specifications checking values in brackets (

WPP 001/4 VWW 1,6 v 3 3. Edition

VE 4/9 F 1000 R 85-5

0 460 494 092

supersedes company engine

All test specifications are valid only for Bosch Fuel injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting	mm			SEE 401.44.400/	
1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	1,5- 1,9	mm		
1.2 Supply pump pressure	1000	3,1- 3,7	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1000	24,5- 25,5	cm <sup>1</sup> /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	-	-	cm 1/1000 strokes	į	1
1.5 Start	100	min. 35,0	cm //1000 strokes		
1 6 Full-load speed regulation	1100	12,0- 18,0	cm 1/1000 strokes		
1.7 Load-dependent start of delivery	-	-			
1		i		1	

2 1 Timing device	n = rev/min mm	700 0,3-1,1(0-1,4)	100 (1,0	0 -î.,4)		
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,2 <b>-</b> 2,8				
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-153)		1000 55-138(4		
2.3 Fuel deliveries	• • • • • •	. 1		3. Dimer	for assembly and adjustment	
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press	Designation	mm	
End stop  Switch-off	1250 1100 1000 600	max. 3,0 (11,0-19,0) (22,7-27,3) 17,5-20,5 (16,5-22,5)		K KF MS SVS + FH A XK B XL	3,2-3,4 5,7-5,9 1,2-1,4 max.2,5 1,8-2,4 18,4-20,4 5,9-8,3	
Idle stop End stop	400 500	min. 14		Observations + operating stroke (cold-start accel.		
2.4 Solenoid	. cut-in volta	ge xxx min. 10,0 xx Rated voltage 12,0				

Testoil-ISO 4113

Test Specifications Distributor-type Fuel-injection Pumps 46

WPP 001/4 STE 5,0d 2. Edition

<u>En</u>

supersedes

company. Steyr

engune: WD 611.85

VE 6/11 F 1150 R 92

0 460 416 020

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0.2

0,02(0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3- 5,7	mm		
.2 Supply pump pressure	1000	6,2-6,8	bar (kgf/cm²)	:	1
1.3 Full-load delivery without charge-air pressure	1100	65,0-66,0	cm <sup>3</sup> /1000 strokes	i i	3,5
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	i !	:
.4 Idle speed regulation	300	14,0-18,0	cm <sup>3</sup> /1000 strokes	•	3,5
5 Start	100	min. 65,0	cm <sup>3</sup> /1000 strokes	!	-
1.6 Full-load speed regulation	1200	24,5-30,5	cm <sup>3</sup> /1000 strokes	<u>!</u> !	
7 Load-dependent start of delivery	-	•		:	:

2.4 Solenoid	max. cut-m volte	<b>&gt;</b>				
End stop	300 350 420 170 250	min. 1,5 max. 1,0 min. 65 max. 52	(11,5-20,5	,	Observations	:
switch-off	1150	0	/11 5 20 5		Х̂К В XL	20,2-22,
End stop	1300 1250 1200 1100 800 500	max. 1,0 min. 1,5 61,0-63,0 57,5-60,5	(23,0-32,0 (62,8-68,2 (59,3-64,7 (55,6-62,4	) )	K KF MS SVS	5,2-5,4 1,3-1,5 max.6,0
2.3 Fuel deliveries Spieed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	3. Dimer	for assembly and adjustment mm
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1150 55-138(40-153)		40-153)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	300 2,6-3,2				50 -7,6
2.1 Timing device	n = rev/min mm	1	700 1,6-2,4(1,3-2,7)		1150 6,8-7,6(6,5-7,9)	
2. Test Spe	cifications	checking values in bi	rackets ( )			

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WPP 001/4 REN 2,0 e

5. Edition

VE 4/9 F 2400 R 95

Overflow temperature 45° C

supersedes10.83 company: Renault engine: F 8 M

0 460 494 105

Pre-stroke setting

DHK: 1 688 901 022/130 bar

Test pressure line 6x2x450 mm / 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

mm

Test Instructions and Test Equipment

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,1-4,5	mm	1	
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)	1	
1.3 Full-load delivery with charge-air pressure	1000	27,8-28,8	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery without	-	-	cm <sup>3</sup> /1000 strokes		
charge-air pressure 1.4 Idle regulation	425	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	10,5-16,5	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1400	-			

2. Test Spe	ecifications	checking values in brackets (	)
2.1 Timing device	n = rev/min mm		Siehe Blatt 2
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,5-3,1	-2400 7,7-8,3
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)
2.3 Fuel delivenes	<u>i</u>		3. Dimensions

,	cm <sup>3</sup> /10 s	55-138 (40-153)		55-138 (40-	153)
2.3 Fuel delivenes		3. Dimer	for assembly		
Speed control lever	Rot. speed rev/min		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2800 2650	max. 6,0 (9,5-17,5)		K	3,2-3,4
	2500	21,0-29,0 (21,0-29,0)		KF	5,7-5,9
	2400 2100	29,2-31,8 (28,2-32, <b>8</b> ) 29,9-32,3 (28,8-33,4)	:	MS	1,2-1,4
	1400 1000 600	27,5-29,5 (26,2-30,8) (26,0-30,6) 25,7-28,7 (24,2-30,2)	!	svs	2,8
switch-off	2400	0		<b>ጵ</b> κ 	18,7-20,7 9,5-12,8
fdle stop	650 600 425	0, 0,2-5,2 (4,0-12,0)		Observations	···
End stop	330 500	min. 30,0 max. 29,0			ote instruc- sheet 2
2.4 Solenoid	max. cut-in volta	· · · · · · · · · · · · · · · · · · ·			

#### 2.1 <u>Timing device</u>

n = min/1	mm				
600	0,7-1,5 (0,4-1,8)				
1000	2,3-3,1 (2,0-3,4)				
1400	(3,6-5,0)				
2000	6,3-7,1 (6,0-7,4)				
2100	6,7-7,5 (6,4-7,8)				
2400	7,0-7,7 (6,6-8,0)				

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator. At 300 1/min there must be a timing-device travel of 1.3 - 3.3 mm.

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4 a

1. Edition

VE 6/10 F 2400 R 121 0 460 406 022

DHK: 1 688 901 022 / 130 bar

supersedes company BMW Test pressure line engine:

M 21 D 24-Europa

6x2x450 mm / 1 680 750 073 Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/. Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgl/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1500	4,3-4,7	mm	1,050	
1 2 Supply pump pressure	1500	6,1-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery without charge-air pressure	500	28,0-29,0	cm <sup>3</sup> /1000 strakes	0	3,0
Full-load delivery with charge-air pressure	1500	40,8-41,8	cm <sup>3</sup> /1000 strokes	1,050	2,5
1 4 Idle speed regulation	400	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	3,0
15 Start	250	35,0-36,0	cm <sup>3</sup> /1000 strokes	0	:
1.6 Full-load speed regulation	2600	17,5-23,5	cm <sup>3</sup> /1000 strok <del>es</del>	1,050	
1.7 Load-dependent start of delivery	-				

2. Test Spe		checking values in b		4000	4500				
2.1 Timing device LDA=1,050	n = rev/min mm	500 (*) 1,1-1	750 ,9(0,8-2,2)	1000	1500 3,8-5,2)	7,4	2300 -8,2(7,1-8,5		
2.2 Supply pump LDA=1,050	n = rev/min bar (kgf/cm²)	500 3,2-3,6				2300 1-8,5			
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40	-153)	2400 55-138(40-153)					
2.3 Fuel deliveries	<u> </u>	<del></del>	and the second s		3. D	imen	SIONS- for assembly		
Spead control lever	: Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air pr bar (kgf/cm²)		ation	and adjustment ; mm		
End stop	2700 2600 2400 1500 ** 750 500	7,0-13,0 40,6-42,6 34,5-35,5	(6,0-14,0) (16,5-24,5) (39,4-43,8) (39,1-43,5) (32,0-38,0) (25,5-31,5)	1,050 1,050	A	KF AS SVS	3,2-3,4 6,3-6,6 1,5-1,7 4,0		
switch-off	2400	0			 :				
idle stop	400 475	max. 3,0	( 4,0-12,0)			Observations *Operating stroke (KSB)  Please note instructions on sheet 2			
End stop	100 400 480	26,5-36,5 31,5-41,5 25,2-29,8			Ple tio				
2.4 Solenoid	max. cut-m voltage	xxx min.			1 -	**Correction at the adjusting nut. (46)			

BOSCH

\*\*\*\*\*\*\*\*\* rated voltage 12V.

\* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator. 500 1/min 1.9 - 2.9 (1.7-3.1) 1000 1/min 3.7 - 4.7 (3.5-4.9)

\*\* Manifold-pressure compensator stroke = 4.3 mm

E24

Test Specifications Distributor-type Fuel-injection Pump

WPP 001/4 PEU 2,3k 1

1. Edition

VE 4/9 F 2075 R 126-2 Overflow temperature 45° C

supersedes 7

company: Peugeot

0 460 494 155

Test pressure line

XD 3 S

DHK: 1 688 901 022/130 bar

6x2x450 mm / 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see V31-W-460i.

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air-press. bar (kgt/cm²)	Difference in deliwery cm <sup>3</sup>
1.1 Timing device travel	1500	5,8- 6,2	mm	0,8	
9.2 Supply-pump pressure	1500	5,6- 6,2	bar (kgf/cm²)	0,8	
1.3 Full-ložයි delivery with	500	42,8-43,8	cm <sup>3</sup> /1000 strokes	0	:
charge-air pressure Full-lead delivery without	1500	54,5-55,5	cm³/1000 strokes	0,8	2,5(3,0)
charge-ax pressure	350	20,0-24,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Fall-speed regulation	2300	25,0-31,0	cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	_				

2. Test Spec	cifications	checking values in bra	ckets ( )					
2.1 Timing device	n = rev/min	750 0 8-1 6/0 5-		00 3(2.7-3.6)	1500 (5.3-6.7)	2000 7,8-8,6(7,5-8,9		
LDA=0,8 bar 2.2 Supply pump	n = rev/min	200	750	2000	(3,3 0,7 )	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
LDA=0,8 bar	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	·			
Overflow delivery	n = rav/min cm³/10 s	500 55-138(40-15	3)		2075 55-138(40-153)			
2.3 Fuel deliveries Speed control lever	Rot. speed	Fuel delivery   Charge-air press.			3. Dime	tor assembly and adjustment mm		
	rev/min	cm <sup>3</sup> /1000 strokes		bar (kgf/cm²)				
End stop	2600 2300 2200 2000	38,0-44,0(37 53,0-55,0(51		0,8 0,8 0,8 0,8	K KF MS	K1 5,4- 5,7 1,2- 1,4		
	1500 1000 750* 500	52,0-55,0(50 48,7-49,7(46	,5-56,5)	0,8 0,25 0	svs	4,6		
switch-off					^ XK	20,2-22,2		
elektr.	400	0			8 XL	19,3-12,6		
idle stop	500 400 350	1	,0-14,0) ,0-26,0)		Manifold-pressure compensator stroke			
End stop	230	min. 60 max. 60			= 4,5 mm Correction at the adjusting nut. (46) Pulling electro-			
2.4 Solencid	max. cut-in voltag	<ul> <li>xxx min 22 rated_voltage</li> </ul>			magnet 24 V			

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# **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 MWM 1,5 c

6. Edition

En

PES 2 A 75 DRS1235,1252,1298 3RS1236,1239,1299 4RS1237,1246,1276,1301	EP/RSV 300-1000		supersedes company engine	4.83 MWM D 208- D 308-
** 6R\$1238,1302  All test specifications are valid for Bosch Fuel Injection Pu  A. Fuel Injection Pump Setting	•	A20505 R		D 225- D 325- D 226- D 327-

Testoil-ISO 4113

Port closing at prestroke (2,15-2,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "C" and "D" cm\100 strokes 3 7,5 Ø	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery "C" and "D" cm\$100 strokes 3 8 Ø	Spring pre-tensioning (torque-control valve)
1000	12	6,2 - 6,6	0,4	9	4,1-4,5	
	9	3,2 - 3,7		6	1,2-2,0	
200	9	2,1 - 2,8		9	2,7-3,7	
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

300 - 1000

1 Uppe	rated speed	rev/min	Interme	Intermediate rated speed		4	Lower rated speed 3 Forque of				
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
ca.68	1000 1050	16,0 8,5		uithout oudlio			300	7,0	-	-	
•	1100	2,4		without auxiliary spring	ly I	100 300	min.19,5				
ca.67	1030 1070 1120	8,0-9,0 2,0-4,0 0,3-1,0	with	with auxiliary spring			390-	7,4-7,6 450=2,0			

The numbers denote the sequence of the tests

\*\* As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>C</b>	st oil temp 40°C (104°F) Speed limitat			uel delivery naracteristics 1	Starting tidle	luel delivery 5	Idle stop   Control rod		
rev/min 1	cm³/1000 strokes 2	changed to ) rev/min	rev/min 4	cm-1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min 8	travel mm 9	
page	3 - 33 !								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 41

### **B. Governor Settings**

1 Upper	1 Upper rated speed Intermediate rated speed					4 Lowe	eed	3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.58	1500	16,0				ca.16	325	7,0		-
	1580 1630	9,0 4,2	without spring	without auxiliary spring				min.19,5 7,4-7,6		
ca.56	1530 1580 1720	8,0-9,0 3,0-4,0 0,3-1,0	with auxiliary spring				445	-505=2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop	Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	(5a) Idle stop		
Test oil tem	p=40°C (104°F) cm <sup>4</sup> /1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes		cm <sup>3</sup> /1000 strokes	revimin	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
pa ge	3 - 33!		63)						

Checking values in brackets

1 mm less control rod travel than col 2

The rating plate described on MWM 1.5 a has recently been modified to enable more precise adjustment on governors with torque control. The modification was carried but in columns n =engine speed and Q = (full-load quantity). Testing was extended to two speeds and two quantities.

Deviating from the instructions WPP 001/4, 1. Supplement "Adjustment of the governor and the pump", the following points now apply:

- (2) Adjustment as per rating plate n = 1 (1st speed) and Q = (1st)quantity; or according to columns 1 and 2.
- (3) Adjustment is carried out until the control-rod travel changes, as read under (2), or (with the new rating plate) until the 2nd quantity is reached at the second speed; or as per columns 4 and 5.
- (6) Is to be adjusted as per rating plate  $n = (1st speed + 20 min^{-1});$ or as per column 3.

In the case of repairs to Fendt tractors on which the new rating plate hat not yet been attached (2nd speed and 2nd quantity), the full-load data applies, listed as per engine types; in accordance with the above instructions.

With new replacement pumps delivered from the Stuttgart warehouse, the spring retainer is not fitted! Order from MWM Co using the old rating plate.

Full-load data for Fendt tractors - Engine D 208/308

Only valid for engines with pumps

PES 3 A 75 C 320/3 RS 1236 and 39 PES 4 A 75 C 320/3 RS 1237

engine power Full-load gelivery Control-rod stop Test oil tep. 40°C (104°F)		Rotational speed limitation	, don democry on a recommend		Starting fuel delivery idla switching point		Intermediate rotational speed Torque-control travel	
revimin	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	mm
,	2	3	4	5	6	7	8	

Fendt tractors - Output at speed - Engine and tractor type

General fitting - Output at speed

$$\frac{D \ 208 - 2}{F \ 31 \ PS \ / \ 3000 \ min^{-1}}$$
1500 \ \ 41,5 - 43,5 \ 1520

# Testollidu 4113

engine por Full-load de Control-roo Test oil terr	Blivery	Rotational-speed fimitation	Fuel delivery characteristics		Starting fuel delivery lidle switching point		intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strakes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm .
1 2		3	4	5	6	7	8	

 $\frac{\text{F 29 PS} / 2600 \text{ min}^{-1}}{1300 \quad 43,0-45,0} \quad 1320$ 

B 28 PS / 2600 min<sup>-1</sup>
1300 41,0 - 43,0 1320

A 26 PS / 2600 min<sup>-1</sup>
1300 42,5 - 44,5 1320

F 28 PS / 2500 min<sup>-1</sup>
1250 42,5 - 44,5 1270

B 27 PS / 2500 min<sup>-1</sup>
1250 40,5 - 42,5 1270

A 25 PS / 2500 min<sup>-1</sup>
1250 41,5 - 43,5 1270

F 27 PS / 2400 min<sup>-1</sup>
1200 42,0 - 44,0 1220

B 26 PS / 2400 min<sup>-1</sup>
1200 40,0 - 42,0 1220

 $\frac{A 24 PS / 2400 min^{-1}}{1200 41,0-43,0}$  1220

F 26 PS / 2300 min<sup>-1</sup>
1150 41,5 - 43,5 1170

 $\frac{\text{B 25 PS} / 2300 \text{ min}^{-1}}{1150 \quad 39, 5 - 41, 5} \quad 1170$ 

 $\frac{A 23 PS / 2300 min^{-1}}{1150 40,5 - 42,5} 1170$ 

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travei	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

 $\frac{\text{F 25 PS } / 2200 \text{ min}^{-1}}{1100 \quad 41,0-43,0} \quad 1120$ 

 $\frac{\text{B 24 PS } / \text{ 2200 min}^{-1}}{1100 \quad 39,0-41,0} \quad 1120$ 

A 22 PS / 2200 min<sup>-1</sup>
1100 40,0 - 42,0 1120

 $\frac{\text{F 24 PS } / 2100 \text{ min}^{-1}}{1050 \quad 40,5-42,5} \quad 1060$ 

B 23 PS / 2100 min<sup>-1</sup>
1050 38,0 - 40,0 1060

A 21 PS / 2100 min<sup>-1</sup>
1050 39,0 - 41,0 1060

F 23 PS / 2000 min<sup>-1</sup>
1000 39,0-41,0 1010

 $\frac{\text{B 22 PS } / 2000 \text{ min}^{-1}}{1000 37,0-39,0} 1010$ 

A 20 PS / 2000 min<sup>-1</sup>
1000 38,0 - 40,0 1010

B 20 PS / 1800 min<sup>-1</sup>
900 36,0 - 38,0 910

 $\frac{A 18 PS / 1800 min^{-1}}{900 36,5-38,5} 910$ 

 $\frac{\text{B 16 PS } / \text{ 1500 min}^{-1}}{750 \quad 34,0-36,0} \quad 760$ 

Testol-180 4113

engine por Full-load de Control-roo Test oil tem	Hivery	Rotational-spaed timitation	Fuel deliv	very characteristics	Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1 2		3	4	5	6	7	8	

 $\frac{A 15 PS / 1500 min^{-1}}{750 36,0-38,0} 760$ 

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm.
1	2	3	4	5	6	7	8	•

F 46,5 PS / 3000 min<sup>-1</sup> 1500 42,0 - 44,01520 PS / 3000 min<sup>-1</sup> B 45 39.0 - 41.01520 1500 PS / 3000 min<sup>-1</sup> A 42 40,5 - 42,51520 1500 PS / 2800 min<sup>-1</sup> F 45 42.0 - 44.01420 1400 8 43,5 PS / 2800 min<sup>-1</sup> 39.0 - 41.01420 1400 A 40,5 PS / 2800 min<sup>-1</sup> 40,0 - 42,01400 1420 F 43,5 PS / 2600 min<sup>-1</sup> 1300 41,5 - 43,5 1320 PS / 2600 min<sup>-1</sup> B 42 39,5 - 41,51320 1300 PS\_/ 2600 min<sup>-1</sup> A 39 40.0 - 42.01320 1300

PS / 2500 min<sup>-1</sup> F 42

40,5 - 42,51250 1270

B 40,5 PS / 2500 min<sup>-1</sup> 38, 5 - 40, 51270 1250

A 37,5 PS / 2500 min<sup>-1</sup> 1270

39.5 - 41.51250

Tesicil-iSO 4113

angine por Full-load de Control-rod Test oil terr	elivery	Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		intermediale rotalional speed Torque-control travel	
rev/min cm³/1000 strokes		rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mæ
1 2		3	4	5	6	7	8	

,	2		3		4	5		6	7	8	
<del></del>	<del> </del>				1	,		•	•	•	•
F 40,5	PS /	2400 m	<u>in<sup>-1</sup></u>								
	40,5 -			0							
B 39	PS /	2400 m	in <sup>-1</sup>		-						
	38,5-			0							
A 36	PS /	2400 m	in <sup>-1</sup>								
1200	39,5-			0							
F 39	PS /	2300 m	in <sup>-1</sup>								
1150	39,5-	41,5	117	0							
B 37,5	PS /	2300 m	in <sup>-1</sup>	-							
1150	38,0 -	40,0	117	0							
A 34,5	PS /	2300 п	in <sup>-1</sup>						٠		
1150	38,0 -	40,0	117	0							
F 37,5	PS /	2200 m	in <sup>-1</sup>								
1100	38,5 -	40,5	112	0							
B 36	PS /	2200 m	in <sup>-1</sup>								
1100	36,5-	38,5	112	0	المنزة لجيدنية بعيست الد		ومنجود المنظم ال				
A 33	PS /	2200 m	nin <sup>-1</sup>								
1100	38,0 -		112	0							
F 36	PS /	2100 m	in <sup>-1</sup>								
1050	38,0 -		106	0							
8 34,5	PS /	2100 m	in <sup>-1</sup>								
1050	36,0 -		106	0		<del> </del>	<del> </del>				<del></del>
A 31,5	PS /	2100 m	in-1								
1050	36,0 -		106	0							· · · · · · · · · · · · · · · · · · ·

engine por Full-toad de Control-rod Test oil tem	slivery	Rotational-speed limitation	, 60, 60, 60, 60, 60, 60, 60, 60, 60, 60				Intermediate rotational speed Torque-control travel	
rev/min cm³/1000 strokes		rev/min	tea/win	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/mın	ww
1 2		3	4	5	6	7	8	

F 34,5	S PS / 2000 min <sup>-1</sup>	
1000		1010
B 33	PS / 2000 min <sup>-1</sup>	•
1000		1010
A 30	PS / 2000 min <sup>-1</sup>	
1000	37,0 - 39,0	1010
3 30	PS / 1800 min <sup>-1</sup>	
900	34,0 - 36,0	910
A 27	PS / 1800 min <sup>-1</sup>	
900	35,0 - 37,0	910
B 24	PS / 1500 min <sup>-1</sup>	
750	33,0 - 35,0	760
A 22,	5 PS / 1500 min <sup>-1</sup>	
	36,0 - 38,0	760

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermedi rotational Torque-c travel	speed
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	mm
,	2	3	4	5	6	7	8	

,	2	3	4	5	6	7	8	
<del></del>	+		+	<del> </del>	<del></del>			
F 62_	PS / 3000 π	nin <sup>-1</sup>						
1500	40,5 - 42,5	1520			<del></del>			
B 60	PS / 3000 m	nin-1						
1500	39,0 - 41,0							
A 56	PS / 3000 m							
1500	40,0 - 42,0							
F 60	PS / 2800 m							
1400	40,0 - 42,0							<del></del>
B 58	PS / 2800 r							
1400	35,5 - 37,5				<del></del>		<del></del>	
A 54	PS / 2800 r							
1400	40,0 - 42,0					<del></del>		<del></del>
F 53	PS / 2600 r							
1300	40,0 - 42,0							
B 56	PS / 2600 r	min <sup>-1</sup>						
1300	38,0 - 40,0				<del></del>			
A 52	PS / 2600 i	<del></del>						•
1300	39,0 - 41,0	1320			<del></del>			
F 56	PS / 2500 I							
1250	39,0 - 41,0	1270			<del></del>			
B 54	PS / 2500							
1250	37,5 - 39,5	1270						
A 50	PS / 2500							
1250	39,0 - 41,0	1270						

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engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	, doi: doi::to::, o.:.d.:.d		Starting fuel delivery ldle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm³/1000 strokes	tea/wiu	cm <sup>3</sup> /1000 strokes	rev/min	mm
1 2		3	4	5	6	7	8	

1,	2	3	4	5	6	7	b	
<del></del>	<del> </del>	1	1		•	•		
F 54	PS / 2400	min <sup>-1</sup>						
1200	39,0 - 41,0							
B 52	PS / 2400	min <sup>-1</sup>						
1200	37,5 - 39,5							
A 48	PS / 2400	min <sup>-1</sup>						
1200	38,0 - 40,0							<del></del>
F 52	PS / 2300	min <sup>-1</sup>						
1150	38,0 - 40,0	1170						
B 50	PS / 2300	min <sup>-1</sup>						
1150	36,5 - 38,5	1170	······································					
A 46	PS / 2300	min <sup>-1</sup>						
1150	37,5 - 39,5	1170	<del> </del>		·			
F 50	PS / 2200	min <sup>-1</sup>						
1100	39,0 - 41,0							
B 48	PS / 2200	min <sup>-1</sup>						
1100	37,0 - 39,0	1120						
A 44	PS / 2200	min <sup>-1</sup>						
1100	38,0 - 40,0	1120						
F 48		min <sup>-1</sup>						
1050	37,5 - 39,5	1060						<del> </del>
B 46		min <sup>-1</sup>						
1050	35, 5 - 37, 5		<del></del>					<u>,</u>
A 42		min <sup>-1</sup>						
1050	36,0 - 38,0	1060						

engine pov Full-load de Control-rod Test oil tem	Blivery	Rotational-speed limitation	Fuel deliv		Starting Idle switchin		Intermedi rotational Torque-c travel	speed
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1,	2	3	4	5	6	7	8	

F 46	PS / 2000 min <sup>-1</sup>	
1000		1010
B 44	PS / 2000 min <sup>-1</sup>	,
1000		1010
A 40	PS / 2000 min <sup>-1</sup>	
1000		1010
в 40	PS / 1800 min <sup>-1</sup>	
900	34,5 - 36,5	910
A 36	PS / 1800 min <sup>-1</sup>	
900	34,0 - 36,0	910
B 32	PS / 1500 min <sup>-1</sup>	•
750	30,5 - 32,5	760
A 30	PS / 1500 min <sup>-1</sup>	
750	33,0 - 35,0	760

engine por Full-load de Control-roc Test oil tem	Blivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin		intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	ww
,	2	3	4	5	6	7	8	

$$\frac{\text{F 90 PS}}{1400}$$
  $\frac{\text{7 2800 min}^{-1}}{39,5-41,5}$   $\frac{1420}{1420}$ 

$$\frac{\text{B } 37 \quad \text{PS} \quad / \quad 2800 \text{ min}^{-1}}{1400 \quad 38,0-40,0} \quad 1420$$

◑

### C. Settings for Fuel Injection Pump with Fitted Governor

engine por Full-load de Control-rod Test oil tem	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	tuel delivery ig point	Intermed rotationa Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

PS / 2400 min<sup>-1</sup> F 81 38,0 - 40,01220 1200 PS / 2400 min<sup>-1</sup> B 78 36,5 - 38,51220 1200 PS / 2400 min<sup>-1</sup> A 72 38.0 - 40.01220 1200 PS / 2300 min<sup>-1</sup> F 78 38,0 - 40,01170 1150 PS /: 2300 min<sup>-1</sup> B 75 36,5 - 38,51170 1150 PS / 2300 min<sup>-1</sup> A 69 1170 37,0 - 39,01150 PS / 2200 min<sup>-1</sup> F 75 38,0 - 40,01120 1100 PS / 2200 min<sup>-1</sup> B 72 36,0 - 38,01120 1100 PS / 2200 min<sup>-1</sup> A 66 1120 37,0 - 39,01100 PS / 2100 min<sup>-1</sup> F 72 37,0 - 39,01060 1050

PS / 2100 min<sup>-1</sup>

PS / 2100 min<sup>-1</sup>

1060

1060

35, 5 - 37, 5

36,0 - 38,0

B 69

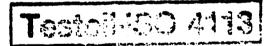
1050

A 63

1050

engine por Full-toad di Control-rod Test oil tem	blivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery	intermedi rotational Torque-d tray of	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

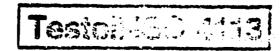
Г	•	
F 69	PS / 2000 min <sup>-1</sup>	
1000		1010
в 66	PS / 2000 min <sup>-1</sup>	-
1000		1010
A 60	PS / 2000 min <sup>-1</sup>	
1000		1010
g 60	PS / 1800 min <sup>-1</sup>	
900	33,5 - 35,5	910 ,
A 54	PS / 1800 min <sup>-1</sup>	
900	34,0 - 36,0	910
B 48	PS / 1500 min <sup>-1</sup>	
750	31,0 - 33,0	760
A 45	PS / 1500 min <sup>-1</sup>	
750	33,0 - 35,0	760



F16

engine por Full-load de Control-rod Test oil tem	slivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	luel delivery g point	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	tev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
],	2	3	4	5	6	7	8.	

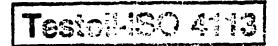
,	2	3	4	5	6	7	8.	
<u> </u>	2	13					- 1.	,
		_1						
B 35,5	PS / 3000 I	min 1						
1500	55,0 - 57,0	1520	800	52,5 - 55,5	i			
	,	-1	<del></del>			<del></del>		
A 32	PS / 3000 (							
1500	51,0 - 53,0	1520			<del>.</del>			
F 41	PS / 2800	min-1						
	66,5 - 68,5		800	55,5 - 58,5	<b>,</b>			
E 38,5	PS/ 2500	$min^{-1}$ .						
		1270	800	55,5 <b>-</b> 58,5	;			
B 37	PS / 2500	min 1						
1250	59,5 - 61,5	1270	800	52,5 - 55,5	; 			
A 34	PS / 2500	min-1						
	F5	1270						
	55,5 - 57,5							
F 36.5	PS / 2300	min <sup>-1</sup>						
1150	60,5 - 62,5	1170	800	55,5 - 58,5	5			
					<del></del>			
B 35	PS / 2300	min <sup>-1</sup>						
1150	58,5 - 60,5		800	52,5 - 55,5	5			
	/ 0000	1						
A 32	PS / 2300							
1150	53,0 - 55,0	1170						
F 33	PS / 2000	min <sup>-1</sup>						
1000	58,5 - 60,5	1010	750	55,0 - 58,0	)			
								<del></del>
B 31	PS / 2000	min <sup>-1</sup>				,		
1000	55,0 - 57,0	1010	750	52,5 - 55,5	5			
	/ 2222	1	<del> </del>					
A 28,								
1000	50,0 - 52,0	1010						



F17

engine po Fuil-load di Control-rod Test oil ten	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermedi rotalional Torque-c travel	Speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	ጠጠ
1	2	3	4	5	6	7	8	

B 28,5	5 PS / 1800 min <sup>-1</sup>	l -			
900	52, 5 ÷ 54, 5	910	750	52,0 - 55,0	
A 26	PS / 1800 min <sup>-1</sup>				
900	48,0 - 50,0	910			
B 24	PS / 1500 min	 [		,	
750	46,5 - 48,5	760	750	50, 5 - 53, 5	
A 22	PS / 1500 min	l -			
750	51,0 - 53,0	760			



engine p Full-load ( Control-re Test oil te	aelivery	Rotational-speed limitation	Fuel deli	Fuel delivery characteristics		fuel delivery ng point	Intermed rotations Torque- trave;	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	tevituin	mm
1	2	3	4	5	6	7	8	<del>                                     </del>
B 53 1500	PS / 3000 r 54,5 - 56,5	nin <sup>-1</sup> 1520	800	51,0 <b>-</b> 54,0	0			
A 48	PS / 3000 r	nin <sup>-1</sup>	<del></del>		<del> </del>		· <del>- · · · · · ·</del> ·	
1500	50,5 - 52,5	1520						
	<del></del>	<del></del>						
F 62	PS / 2800 r	nin <sup>-1</sup>						
1400	66,5 - 68,5	1420	800	54,0 - 57,6	0			
F_58	PS / 2500 r	min <sup>-1</sup>					<del></del>	
1250	62,5 - 64,5	1270	800	54,0 - 57,0	0			
B 56	PS / 2500 r	nin <sup>-1</sup>				<del></del>		
1250	59,5 - 61,5	1270	800	51,0 - 54,0	0			
A 51	PS / 2500 r							
1250	54,5 - 56,5	1270						
F 55	PS / 2300 r	nin <sup>-1</sup>						
1150	58,5 - 60,5	1170	800	54,0 - 57,	0			
B 53	PS / 2300 r	min <sup>-1</sup>				· · · · · · · · · · · · · · · · · · ·	**************************************	<del></del>
1150	57,5 - 59,5	1170	800	51,0 - 54,	0			
A 48	PS / 2300 r	min <sup>-1</sup>	<del></del>		<del></del>	<del></del>		· <del></del>
1150	51,5 - 53,5	1170						
	5 PS / 2000 r	nin <sup>-1</sup>				<del></del>		<del></del>
1000	57,5 - 59,5	1010	750	54,0 - 57,	0			
B 46.5	5 PS / 2000 r						<del></del>	<del></del>
1000	53, 5 - 55, 5	1010	750	51,0 - 54,0	^			

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PS /

48,5 - 50,5

2000 min<sup>-1</sup>

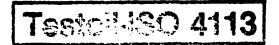
1010

A 43

10 0

engine poi Full-load de Control-rod Test oil tem	elivery	Rotational-speed limitation	Fuel deliv	rery characteristics	Starting Idle switchir	fuel delivery ng point	Intermedi rolational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
<b> </b> ,	2	з	4	5	6	7	8	

B 43	PS / 1800 min <sup>-1</sup>				
900	52,5 - 54,5	910	750	52,0 - 55,0	 <del></del>
A 39	PS / 1800 min <sup>-1</sup>				
900	47,5 - 49,5	910			 ····
B 36	PS / 1500 min <sup>-1</sup>				
750	49,5 - 51,5	760	650	49,0 - 52,0	 
A 33	PS / 1500 min <sup>-1</sup>				
750	45,5 - 47,5	760			



engine po Full-load o Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery ng point l	Intermed rotationa Torque- travel	I speed
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	tev/min	mm
1	2	3	4	5	6	7	8	<del> </del>
B 71	PS / 3000		300		0		•	
1500	54, 5 - 56, 5	1520	800	62,0 - 65,0	<u> </u>			
A 64	PS / 3000	min <sup>-1</sup>						
1500	49,5 - 51,5	1520						
F 83	PS / 2800	min <sup>-1</sup>						
1400	65, 5 - 67, 5	1420	800	63,0 - 66,0	0			
F 78	PS / 2500	min <sup>-1</sup>					<del></del>	
1250	61,5 - 63,5	1270	800	50,0 - 53,0	כ			
B 74,9	5 PS / 2500 :	min <sup>-1</sup>						
1250	58,5 - 60,5	1270	800	50,0 - 53,0	)			
A 68	PS / 2500	min <sup>-1</sup>						
1250	53,5 - 55,5	1270						
F 73	PS / 2300	min <sup>-1</sup>						
1150	60,5 - 62,5	1170	800	52,0 - 55,0	0			
B 71	PS / 2300	min <sup>-1</sup>						
1150	58,5 - 60,5	1170	800	50,0 - 53,	0			
A 64	PS / 2300	min <sup>-1</sup>						
1150	51,5 - 53,5	1170						

PS / 2000 min<sup>-1</sup> F 66 57,5 - 59,5 1000

1010

52,0 - 55,0

B 62,5 PS / 2000 min<sup>-1</sup>

53,5 - 55,5 1000

750 1010

750

50,0 - 53,0

PS / 2000 min<sup>-1</sup> A 57 1010

1000 48,5 - 50,5

engine por Full-load de Control-roo Test oil terr	elivery	Rotational-speed	Fuel deliv	ery characteristics	Starting Idle		Intermedi rotational Torque-c travel	speed
revimin	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

0.57	PS / 1800 min <sup>-1</sup>		' '	·	
B 57 900	PS / 1800 min <sup>-1</sup> 51,5 - 53,5	910	750	49,0 - 52,0	
	31,3 = 33,3				
A 52	PS / 1800 min <sup>-1</sup>				
900	45,5 - 47,5	910	_		
B 48	PS / 1500 min <sup>-1</sup>				
750	48,5 - 50,5	760	650	47,0 - 50,0	
A 44	PS / 1500 min <sup>-1</sup>				· ·
750	45,5 - 47,5	760			

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engine por Full-load de Control-roo Test oil terr	elivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Idle	fuel delivery	Intermed rotational Torque	speed
tea/wiu	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	1	cm <sup>3</sup> /1000 strokes	1	mm
1	2	3	4	5	6	7	8	
		1						
B 106		min <sup>-1</sup>	900	50.0 52	^			
1500	55,5 <b>-</b> 57,5	1520	800	50, 0 - 53,		<del></del>	<del></del>	
A 96	PS / 3000	min <sup>-1</sup>						
1500	49,5 - 51,5	1520					<del> </del>	
F 125	PS / 2800	min <sup>-1</sup>	-					
1400	66,5 - 68,5	1420	800	54,0 - 57,	0			
= 117	DC / 2500	min <sup>-1</sup>					<del></del>	
<u>F 117</u> 1250	PS / 2500 61,5 - 63,5	1270	800	54,0 - 57,	0			
	<del></del>						<del></del>	
B 112		min <sup>-1</sup>			0			
1250	58,5 - 60,5	1270	800	50, 0 - 53,	<b>U</b>			
A 102	PS / 2500	min <sup>-1</sup>						
1250	53, 5 - 55, 5	1270						
F 110	PS / 2300	min <sup>-1</sup>						
1150	59,5 - 61,5	1170	800	54, 0 - 57,	0			
	<del> </del>	1			<del></del> -			
B 106		min <sup>-1</sup>	800	50,0 - 53,	0			
1150	56,5 - 58,5				<del></del> -			
A 96	PS / 2300	min <sup>-1</sup>						
1150	51,5 - 53,5	1170						
F 99	PS / 2000	min <sup>-1</sup>						
1000	56,5 - 58,5	1010	750	54,0 - 57,	0			
B 94	PS / 2000	min-1						<del> </del>
1000	53, 5 - 55, 5	1010	750	50, 0 - 53,	0			
		<del></del>					<del></del>	p
A 86	PS / 2000							
1000	47,5 - 49,5	1010						

engine po Full-load de Control-rod Test oil tem	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermedi rotational Torque-c travel	speed
rev/min	cm³/1000 strokes	rey/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm²/1000 strokes	1	mm
1	2	3	4	5	6	7	8	

, 00	PS / 1800 min <sup>-1</sup>		, ,	•	•
B 86	PS / 1800 min <sup>-1</sup>	_			
900	49,5 - 51,5	910	750	53,0 - 56,0	
A 78	PS / 1800 min <sup>-1</sup>				
900	46,5 - 48,5	910			
B 72	PS / 1500 min <sup>-1</sup>				
750	49,5 - 51,5	760	650	47,0 - 50,0	
A 56	PS / 1500 min <sup>-1</sup>		\$ e \$ \$		
750	45,5 - 47,5	760	*\$		

Testoil-ISO 4113

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eligine power Full-load delivery Control-rod stop Fest oil temp 40°C (104°F)		Rotational-speed limitation	Fuel deli	Fuel delivery characteristics		Starting fuel delivery lide switching point		kate Li speed control
ABAIMIU	cm <sup>1</sup> /1000 strakes	revimin	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	revimin	mm
<b>)</b> ,	2		4	5	6	7	8	ļ
7			ı	1	•	1	•	•

PS / 2800 r	min-l	1	•	•	•	
	min 3					
51 5 - 52 5		_				
The state of the s	1420	800	46,0 - 49,0	<del></del>		
PS / 2500 (	<u> </u>					
52,5 - 54,5	1270	800	46,0 - 49,0			
PS / 2500 i	min <sup>-1</sup>					
		800	44,0 - 47,0	<b>.</b>		
PS / 2500 i	min <sup>-1</sup>					
						<del>,</del> _
P\$ / 2300 i	min <sup>-1</sup>					
		800	46,0 - 49,0			
PS / 2300 i	min <sup>-1</sup>					
		800	44,0 - 47,0			
PS / 2300 i	min <sup>-1</sup>					
PS / 2000 i	min <sup>-1</sup>					
		800	46,0 - 49,0			
PS / 2000 i	min <sup>-1</sup>					
		800	44,0 - 47,0			
PS / 2000 i	min <sup>-1</sup>				•	
	1010					
PS / 1800 i	min <sup>-1</sup>					
41,5 - 43,5	910					
PS / 1500 i	min <sup>-1</sup>					
39,5 - 41,5	760					
	PS / 2500    52,5 - 54,5    PS / 2500    49,5 - 51,5    PS / 2300    49,5 - 51,5    PS / 2300    48,5 - 50,5    PS / 2300    45,5 - 47,5    PS / 2000    43,5 - 45,5    PS / 2000    41,5 - 43,5    PS / 2000    41,5 - 43,5    PS / 1800    41,5 - 43,5    PS / 1500	PS / 2500 min <sup>-1</sup> 52,5 - 54,5 1270  PS / 2500 min <sup>-1</sup> 49,5 - \$1,5 1270  PS / 2500 min <sup>-1</sup> 49,5 - 51,5 1270  P\$ / 2300 min <sup>-1</sup> 48,5 - 50,5 1170  PS / 2300 min <sup>-1</sup> 45,5 - 47,5 1170  PS / 2300 min <sup>-1</sup> 45,5 - 47,5 1170  PS / 2000 min <sup>-1</sup> 43,5 - 45,5 1010  PS / 2000 min <sup>-1</sup> 41,5 - 43,5 1010  PS / 2000 min <sup>-1</sup> 41,5 - 43,5 1010  PS / 1800 min <sup>-1</sup> 41,5 - 43,5 910  PS / 1500 min <sup>-1</sup>	PS / 2500 min <sup>-1</sup> 52,5 - 54,5	PS / 2500 min <sup>-1</sup> $52,5-54,5$	PS / 2500 min <sup>-1</sup> 52,5 - 54,5	PS / 2500 min <sup>-1</sup> 52,5 - 54,5

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engine p Full-load Cantrol-re Test oil te	delivory	Rotational-speed limitation	Fuel dela	r very characteristics	Starting fuel delive Idle switching point	ry	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	tea/wiu	rev/min	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000	0 strokes	1	mm
1	2	3	- 4	5	6 7		8	ļ
F 50	PS / 2800 :	min <sup>-1</sup>						
1400	48,5 - 50,5	1420	800	46,0 - 49,0				
F 48,	5 PS / 2500 r	min <sup>-1</sup>						
1250	50,5 - 52,5	1270	300	46,0 - 49,0	)			
B 46,5	5 PS / 2500 r	nin <sup>-1</sup>						
1250	47,5 - 49,5	1270	800	43,0 - 46,0	1			
A 42	PS / 2500 m	nin <sup>-1</sup>				•′		
1250	47,5 - 49,5	1270					÷.,	
F 46	PS / 2300 m	nin <sup>-1</sup>					:	
1150	47,5 - 49,5	1170	800	46,0 - 49,0	)			
B 44	PS / 2300 m	nin <sup>-1</sup>						
1150	45,5 - 47,5	1170	300	43,0 - 46,0	) 			
A 40	PS / 2300 m	nin <sup>-1</sup>						
1150	45,5 - 47,5	1170						
F 40	PS / 2000 m	nin <sup>-1</sup>						
1000	44,5 - 46,5	1010	800	46,0 - 49,0				
B 38,5	S PS / 2000 m	nin <sup>-1</sup>						
1000	42,5 - 44,5	1010	800	43, 0 - 46, 0				
A 35	PS / 2000 m	rin <sup>-1</sup>						
1000	42,5 - 44,5	1010						
A 31,5		nin <sup>-1</sup>						
900	40,5 - 42,5	910						<del></del>
A 26	PS / 1500 m							
750	39,5 - 41,5	760						

Testoil-ISO 4113

engine po Full-load d Control-ro Test oil ter	elivery	Retational-speed limitation	Fuel deliv	ery characteristics	Idle	fuel delivery ng point	Intermed rotationa Torque- travel	speed
ev/min	cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	i .	cm <sup>3</sup> /1000 strokes	rev/min	mm
<u> </u>	2	3	4	5	6	7	<del></del>	<del> </del>
F 68	PS / 2800	min <sup>-1</sup>						
1400	49,5 - 51,5	1420	800	46,0 - 49,0	) 			
F 66	PS / 2500	min <sup>-1</sup>						
1250	50,5 - 52,5	1270	800	46,0 - 49,0	)			
B 63	PS / 2500	min <sup>-1</sup>						
1250	47,5 - 49,5	1270	800	44,0 - 47,0	)		<del> </del>	
A 57,5	S PS / 2500	min <sup>-1</sup>						
1250	47,5 - 49,5	1270						
F 61	PS / 2300	min <sup>-1</sup>						
1150	47,5 - 49,5	1170	800	46,0 - 49,0	)			
B 58,	5 PS / 2300	min <sup>-1</sup>						
1150	45,5 - 47,5	1170	800	44,0 - 47,0	)			
A 53,	5 PS / 2300	min <sup>-1</sup>						
1150	45,5 - 47,5	1170						
F 53	PS / 2000	min <sup>-1</sup>						
1000	43,5 - 45,5	1010	800	46,0 - 49,0	)			··
B 51	PS / 2000	min <sup>-1</sup>						
1000	41,5 - 43,5	1010	800	44,0 - 47,0	0			
A 46,	5 PS / 2000	min <sup>-1</sup>						
1000	41,5 - 43,5	1010						
A 42	PS / 1800	min <sup>-1</sup>						
900	40,5 - 42,5	910					·	
A 35	PS / 1500	min <sup>-1</sup>						
750	39,5 - 41,5	760						

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engine p Full-load Control-re Test oil te	delivery	Rotational-speed	Fuel deliv	rery characteristics	Starting Idle switchir	fuel delivery ng point	intermed rotationa Torque-t	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	mm
F 102	PS / 2800	min <sup>-1</sup>	•	•				
1400	49,5 - 51,5	1420	800	46,0 - 49,0	) 			
F 99	PS / 2500	min <sup>-1</sup>						
1250	50,5 - 52,5	1270	300	46,0 - 49,0	)	\$		
B 95	PS / 2500	min <sup>-1</sup>						
1250	47,5 - 49,5	1270	800	44,0 - 47,0	)			
A 86	PS / 2500	min <sup>-1</sup>						
1250	47,5 - 49,5	1270	5					
F 92	PS / 2300	min <sup>-1</sup>						
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 88	PS / 2300	min <sup>-1</sup>				<del></del>		
1150	45,5 - 47,5	1170	800	44,0 - 47,0	)			
A 80	PS / 2300	min <sup>-1</sup>	<del> </del>					
1150	45,5 - 47,5	1170						
F 80	PS / 2000	min <sup>-1</sup>						
1000	43,5 - 45,5	1010	800	46,0 - 49,0	)			
B 77	PS / 2000	min <sup>-1</sup>					-	
1000	41,5 - 43,5	1010	800	44,0 - 47,0	)			
A 70	PS / 2000	min <sup>-1</sup>						
1000	41,5 - 43,5	1010						
A 63	PS / 1800	min <sup>-1</sup>	<del></del>			······································		
	, 2000	<del></del>						

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40,5 - 42,5

A 52,5 PS / 1500 min<sup>-1</sup> 39,5 - 41,5

910

760

900

750

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0

## C. Settings for Fuel Injection Pump with Fitted Governor

angine po Full-load d Control-ro Fest oil ter	slivery	11	Rotational-speed imitation	Fuel deliv	ery characteristics	Starting Idle switchin	fuel delivery ng point	intermedi rotational Torque-c travel	speed
ev/min	cm <sup>3</sup> /1000 stro	kes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	ten/wiu	cm³/1000 strokes	rev/min	mm
1	2	i i	3	4	5	6	7	8	<b> </b>
B 48 1500	PS / :	3000 п 49,0	1520	800	49,5 - 52,	5			
A 43,	5 PS / 3	3000 п	nin <sup>-1</sup>					<del></del>	<del></del>
1500	44,0 -		1520						
F 55	PS /	2800 n	11n <sup>-1</sup>						
1400	53,5 -		1420	800	52, 5 - 55,	5			
F 53	PS /	2500 n	nin <sup>-1</sup>						
1250	55,5 -	57,5	1270	800	52, 5 - 55,	5			
B 50	PS /	2500 n	iin <sup>-1</sup>						
1250	52,5 -	54,5	1270	800	49,5 - 52,	5			<del></del>
A 46,	5 PS /	2500 n	nin <sup>-1</sup>						
1250	48,0 -	50,0	1270			<del></del>		<del></del>	
F 50	PS /	2300 n	nin <sup>-1</sup>						
1150	56,0-	58,0	1170	800	51,0 - 54,	0			

1170 51,5 - 53,5 1150

800

49,5 - 52,5

PS / 2300 min<sup>-1</sup> A 44 1170

47,0 - 49,01150

F 46

1000

PS / 2000 min<sup>-1</sup>

750

52, 5 - 55, 5

PS / 2000 min<sup>-1</sup> B 44

54,0 - 56,0

50,5 - 52,5 1000

750

50,0-53,0

PS / 2000 min<sup>-1</sup> A 40

46,0 - 48,0 1000.

1010

1010

1010

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engine po Full-load di Control-roi Test oil ten	elivery	Rotational-speed limitation	Fuel delivery characteristics		Starting Idle switchin	fuel delivery	Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mra
1,	2	3	4	5	6	7	8	

B 40 PS / 1800 min<sup>-1</sup> 49,5 - 51,5 910 750 50,0 - 53,0 900 A 36,5 PS / 1800 min<sup>-1</sup> 45,0 - 47,0 910 900 B 33,5 PS / 1500 min<sup>-1</sup> 47,5 - 49,5 760 750 A 30,5 PS / 1500 min<sup>-1</sup> 43,5 - 45,5 760 750

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engine p Full-load Control-re Yest oil te	delivery	Rotational-speed limitation	Fuel delin	rery characteristics	idle	fuel delivery	intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	1	lww
1	2	3	4	5	6	7	.8	
B 64	PS / 3000	<del></del>	,		•	<b>'</b>	•	•
1500	47,5 - 49,5	1520	800	49,0 - 52,0				
A 58	PS / 3000 i							
1500	44,0 - 46,0	1520						
F 74	PS / 2800 i	nin <sup>-1</sup>					<del></del>	
1400	53,5 - 55,5	1420	800	52,0 - 55,0	<b>!</b>			
70,5	PS / 2500 r	min <sup>-1</sup>	<del></del>					
1,250	52,5 - 54,5	1270	800	52,0 - 55,0	•			
3 67	PS / 2500 r	nin <sup>-1</sup>	<del></del>					
1250	49,0 - 51,0	1270	800	49,0 - 52,0	)			
A 61	PS / 2500 r	nin <sup>-1</sup>						
1250	44,5 - 46,5	1270						
67	PS / 2300 r	nin <sup>-1</sup>	<del></del>		<del></del>			
1150	51,5 - 53,5	1170	800	52,0 - 55,0	)			
3 64,5	PS / 2300 m	nin <sup>-1</sup>						
1150	49,0 - 51,0	1170	800	49,0 - 52,0	)			
58,5	PS / 2300 m	nin <sup>-1</sup>						<del></del>
150	44,5 - 46,5	1170						

F 61 PS / 2000 min<sup>-1</sup>

1000 50,0 - 52,0 1010 750 49,5 - 52,5

B 58,5 PS / 2000 min<sup>-1</sup>

1000 48,0 - 50,0 1010 750 49,5 - 52,5

A 53 PS / 2000 min<sup>-1</sup>

1000 44,0 - 46,0 1010

Tesicii/180 4113

engine pr Full-load of Control-ro Test oil te	Jelivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery ng point	Intermed rotationa Torque- travel	speed
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53	PS / 1800 r 47,0 - 49,0	min <sup>-1</sup> 910	750	49,5 - 52,	5			
A 49	PS / 1800 i	min <sup>-1</sup>						
900	43,0 - 45,0	910						
B 44,	5 PS / 1500 I	min <sup>-1</sup>						
750	47,0 - 49,0	760						

PS / 1500 min<sup>-1</sup> A 41 43,0 - 45,0 760 760

Testcil-ISO 4113

engine power Full-load delivery Control-rod stop Test oil temp: 40°C (104°F)		Rotational-speed limitation	- •		Idle	Starting fuel delivery ldle switching point		intermediate rotational speed Torque-control travel	
rev/mm	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	ten/win 1 ww		
•	2	3	4	5	6	7	8	1	

B 96 PS / 3000 min<sup>-1</sup>
1500 51,5 - 53,5 1520 800

50,0 - 53,0

A 87 PS / 3000 min<sup>-1</sup>
1500 47,5 - 49,5 1520

F 112 PS / 2800 min<sup>-1</sup>
1400 58,0 - 60,0 1420 800 53,0 - 56,0

 $\frac{\text{F } 106 \text{ PS } / 2500 \text{ min}^{-1}}{1250 \quad 57, 5 - 59, 5} \quad 1270 \quad 800 \quad 53, 0 - 56, 0$ 

B 101 PS / 2500 min<sup>-1</sup>
1250 54,0 - 56,0 1270 800 50,0 - 53,0

A 92 PS / 2500 min<sup>-1</sup>
1250 49,0 - 51,0 1270

F 101 PS / 2300 min<sup>-1</sup>
1150 57,5 - 59,5 1170 800 53,0 - 56,0

B 97 PS / 2300 min<sup>-1</sup>
1150 55,0 - 57,0 1170 800 50,0 - 53,0

A 88 PS / 2300 min<sup>-1</sup>
1150 50,0 - 52,0 1170

F 92 PS / 2000 min<sup>-1</sup>
1000 52,5-54,5 1010 750 50,0-53,0

B 88 PS / 2000 min<sup>-1</sup>
1000 50,0 - 52,0 1010 750 50,0 - 53,0

A 80 PS / 2000 min<sup>-1</sup>
1000 45,5 - 47,5 1010

Teston 20 4113

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery ldle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	lww
,	2	3	4	5	6	7	8	
<b></b>		<del>                                     </del>	1	1	•	4	•	•

			, ,	•	
8 80 900	PS / 1800 min <sup>-1</sup> 50,0 - 52,0	910	750	50,0 - 53,0	
300	30,0 - 32,0				
A 73	PS / 1800 min <sup>-1</sup>	,			
900	45,5 - 47,5	910			
B 67	PS / 1500 min <sup>-1</sup>				
750	50,0 - 52,0	760	650	52,0 - 55,0	
A 61	PS / 1500 min <sup>-1</sup>				
750	45,5 - 47,5	760			

## Testoil-180 4113

WPP 001/4 HOR 1,3 c

2. Edition

En

PES 2 A 65 D 410/3 RS 1273 Komb.-Nr. 0 400 462 049

RSV 400-1225 A 1 B 1091 DL A 1 C 1091 DL

supersede 12.77 company Holder

1 - 2

Testoil-ISO 4113

0 -90° + 0,5° (+ 0,75°)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

mm (from BQC)RW = 4.5 - 7.5 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm .	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1225	10,8+0,1	4,0-4,1	0,2 (0,3)			
400	7,7-7,9	1,0-1,6	0,2 (0,3)			
<u> </u>		·				

Adjust the fuel delivery from each outlet according to the values in  $\square$ 

#### **B.** Governor Settings

1(1)	r rated speed		Interme	diate rated	d speed	(4)	Lower	rated speed	(3)		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- tever deflection	rev/min	travel	rev/min	Control rod travel mm	
1	2	3	4	5	6	in degrees 7	8	9	10	11	
1	800	0,3-1,0	-	-	-	ca. 26	400	7,3	1225	10,8-10,9	
loose	x =	4,75					100	min. 19,0	1000	11,1-11,3	
ca. 66	9,8	1265-1275					400	7,7 - 7,9	500	11,4-11,5	
29	4,0 1450	1295-1325 0,3-1,7	1				560 <b>-</b> 700	620 = 2,0 max. 1,0			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	11301	iel delivery iaracteristics	Starting (	uel delivery 5	4a idle stop		
rev/min	cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm	
1225	40,0 - 41,0 (39,0 - 42,0)	1265-1275*	1000 500	(38,5-42,5)	100	66,0-76 (63,0-79 = 19,5 - 21,0 mm RW		7,8	

Checking values in brackets

1 mm less control rod travel than col. 2

3.84

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WPP 001/4 HOR 2,0 a 1

1. Edition

PES 3 A 65 D 410/3 RS 1274 Komb.-Nr. 0 400 463 117

EP/RSV 400-1225 A1B 1042L

Holder company VD 3

1 - 2 - 3 je  $120^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

mm (from BDC) RW = 6,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve		
rev/min	mm (2)	cm <sup>1/100</sup> strokes	cm <sup>3</sup> / 100 strokes	mm	cm·/100 strokes	mm		
1	2	3	4	2	3	6		
1225	10,8+0,1	4,2 - 4,3	0,2 (0,3)					
400	7,7-7,9	1,0 - 1,6	0,2 (0,3)		:			
				Ì				
	İ							

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

1 Uppe	r rated speed		Interme	diate rated	speed	(4)		rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	travel mm	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0	-	<del>-</del>	<del>-</del>	ca. 24	400 100	5.8 min. 19,0	-	-
ca. 64	4,0 1	265-1275 295-1325 0,3-1,7					400 539-5 700	6,2 - 6,4 90 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	ull-load stop	6 Rotational- speed limitat	11361	uel delivery naracteristics	Starting f			
Test oil to rev/min 1	emp 40°C (104°F) cm³/1000 strokes 2	Note: changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm=/1000 strokes 7	rev/min 8	Control root travel mm
1225	42,0 - 43,0 (41,0 - 44,0)	1265-1275*	-	-	100	55,0-70,0 = 19,0 - 21,0 mm		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

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Testoil-ISO 4113

WPP 001/4 EIC 5,9 b

3. Edition

RSV 300-1150 AOB 2001 DR

supersedes

12.81

company engine

Eicher

EDK 6-4 Saugmotor 77 kW (105 PS)

PES 6 A 80 D 320 RS Komb.-Nr. 0 400 476 071 1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

1280

#### A. Fuel Injection Pump Settings

(2,10-2,30)Port closing at prestroke

Control rod travel		Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm³/100 strokes 3	mm 6
8,9-9,0	5,1 - 5,2	0,2(0,35)			
6,1-6,3	0,7 - 1,3	0,2 (0,3)			
	mm 2 8,9-9,0	travel cm <sup>3</sup> /100 strokes 3 8,9-9,0 5,1-5,2	Control rod travel  mm cm³/100 strokes 2  8,9-9,0  5,1-5,2  Difference cm³/100 strokes 4  0,2(0,35)	Control rod travel  mm	Control rod travel  mm cm³/100 strokes 3  8,9-9,0 5,1-5,2  Difference Control rod travel  mm cm³/100 strokes 2  0,2(0,35)

mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe		3 Tot	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control red travel
1	2	3	4	5	6	7	8	9	10	11
_	800	0,3-1,0	-	•	-	ca. 29	300	5,7	1 130	8,9-9,0
loose	χ =	6,0					100	min.19,5	795	9,2-9,4
ca. 53	1215-	180=7,9 1245=4,0 0,3-1,7	· ·				300 420 <b>-</b> 4 650	6,1-6,3 80= 2,0 max. 1,0	500	9,5-9,6

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	(5a) idle stop		
Test oil temp rev/min t	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1130	51,5 - 52,5 (50,0 - 54,0)	170-1180*	900 500	48, 5 - 51, 5 (47, 0 - 53, 0) 46, 5 - 48, 5 (45, 0 - 50, 0)	100	16,3-16,9 mm RW	300	6,2	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 HOR 2, 9b

2. Edition

PES 3 A 80 D +10/3 RS1313 EP/RSV 400-1250 A0 B 1123 L

supersecte .82

Komb.-Nr. 0 400 463 136

A 0 C 1123 L

companyHolder engine VD 310-8

36 k₩

0 - 120 - 240° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,70-1,80 Port closing at prestroke (1,65-1,85)

Festoil-ISO 4113

mm (from BDEW 9 Port closing difference between controlrod travel 9 and max. 9,0-9,9°

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm-/100 strokes 3	mm 6
1250	9,4-9,5	5,6 - 5,7	0,2(0,35)			
400	6,4-6,6	0,9 - 1,5	0,2(0,3)			
			<u> </u>			<u> </u>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm			ediate rate		Control- lever deflection in degrees	rev/min	Control rod travel mm	3 To	rque control   Control rod   travel   mm
loose	800 X =	0,3-1,0 4,0	-	5	<u></u>	ca. 20		6,3 min.19,5 6,7-6,9	-	-
ca.49	4,0 1	290-1300 315-1345 0,3-1,7						70= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

ピツ	ill-load stop	6 Rotational- speed limitat	Ga Fuel delivery characteristics		Starting for	Starting fuel delivery 5 da Idle sto		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
1250	56,5 - 57,5 (55,0 - 59,0)	1290-1300*			-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

G14

40

WPP 001/4 MAN 9,7 o2

1. Edition

En

PES 6 A 95 D 410 RS 2108

EP/RSV 250-1100 A 1 B 692 D

supersedes ]

company MAN

engine D 2156 HM 6 HKD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm :	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	9,0	7,5-8,0	0,5			_
200	6,0 6,0	3,2-4,2 0,5-1,4				
	1					

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Degree of deflection of control lever	rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	Control rod travel mm	(3)	rque control  Control rod  travel  mm
ca.59	1100 1150 1200	16,0 11,5 6,3		<b>.</b>	volia	ca. 23	100	7,5 19 - 21	1080 900	0,2 - 0,4
23	1160 1200 1350	9,0-12,0 4,6- 7,9 0,3- 1,0		out aux			250 400 650	7,2- 7,8 3,5- 5,3 0 - 1,0		0,4 - 0,6

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(29)	II-load stop	6 Rotational- speed limitat	11381	nel delivery paracteristics	Starting fuel delivery 5			e stop   Control rod
rev/min	emp 40°C (104°F) cm³/1000 strokes 2	Note: changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
1100	110,0 - 112,0 (109,0 - 113,0)	1140-1155*	700 500	110,0 - 113,0 (109,0 - 114,0) max. 114,0	100	17,7-18,3 mm RW	250	7,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

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WPP 001/4 MAN 9,7 o3

1. Edition

En

PES 6 A 95 D 410 RS 2108

RSV 250-1100 A1 B 734 L

A1 C 734 L

companyMAN

engine D 2356 HM 5 H

Komb.-Nr. 0 400 876 220

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,7 -1,8 (1,65-1,85)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pte-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1000	9.0	7.5-8.0	0,5			
	6,0	3,2-4,2				
200	6,0	0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	er rated speed		interm	ediate rat	ed speed	(4)	Control rod			rque control Control rod
Degree of deflection of control lever	travel mm	travel mm rev/min	4	5	6	lever deflection in degrees 7	rev/min	travel mm	rev/min	travel mm
ca. 57	1100 1160 1200	16,0 8,8 4,0		<u>-</u>	- <u> </u>	ca.22	250 100	6,2	1080 300	0 1,0 - 1,6
29	1160 1200 1320	8,3-11,0 2,9-5,7 0,3-1,0		without auxolia with auxiliary			250 400 500	5,8- 6,5 0 - 2,3 0 - 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat	11361	iel delivery paracteristics	Starting (	uel delivery 5	4a Idle stop		
	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
1100	111,5-113,5 (110,5-114,5)	1130-1145*	-	-	100	18,2-18,8 mm RW	250	6,2	
		·							

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.84

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WPP 001/4 MAN 9,7 o1 1. Edition

En

PES 6 A 95 D 410 RS 2108 W

EP/RSV 250-1100 A 1 B 1071

supersedes MAN company

engine D 2156 HMN 5 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,7 -1,8
Port closing at prestroke (1,65-1,85)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1/1</sup> 00 strokes	100 strokes	mm 2	cm1/100 strokes	mm   6
1000	9,0	7,5 - 8,0	0,5		3	
	6,0	3,2 - 4,2	]			
200	6,0	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed  Control rod  travel  mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	(3) To	rque control  Control rod  travel  mm  11
Ca. 59	1100 1150 1190	16,0 11,4 6,0				ca. 25 v spring	250 100 250	6,0 19 - 21 5,7 - 6,3	1100 300	0 1,2 - 1,8
29	1160 1250 1350	8,0-11,0		ut aux auxili			350 450	1,7 - 3,6 0 - 1,0		

The numbers genote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat	iel delivery paracteristics	Starting f	uel delivery 5	(4a) Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min	cm=/1000 strakes	rev/min	cm=/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	120,5-123,5 (119,5-124,5)	1140-1155*	500	max. 118,5	100	min. 18,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

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Testoil-ISO 4113

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WPP 001/4 MAN 9,7 o

2. Edition

En

PES 6 A 95 D 410 RS 2108 Y

EP/RSV 250-1100 A1 B 1071

supersedes 8.74

company MAN

Pagine D 2156 HMN 6 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,7 - 1,8 Port closing at prestroke (1,65- 1,85)

Testoil-ISO 4:113

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control vaive)
rev/min	mm 2	cm <sup>1</sup> /100 strokes 3	cm <sup>1</sup> / 100 strokes 4	mm 2	cm <sup>2</sup> /100 strokes	mm 6
1000	9,0	7,5-8,0	0,5			
200	6,0 6,0	3,2-4,2 0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

11 1	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	_ower rev∞min 8	rated speed Control rod travel mm	(3)	rque controi  Controi rod  travei  mm   11
ca. 59	1100 1150 1190	16,0 11.4 6,0	wit	hout a	uxoli	ca. 25	100	6,0 19 - 21	1100 300	0 1,2 - 1,8
23	1160 1250 1350	8,0-11,0 1,3- 3,2 0,3- 1,0				spring	250 350 450	5,7- 6,3 1,7- 3,6 0 -1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting f	uel delivery 5	4a idle stop	
Test oil te rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm=/1000 strokes 7	rev/min 8	Cantrol rod travel mm 9
1100	108,5-110,5 107,5-111,5)	1140-1155*	500	max. 104,0	100	min. 18,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

BOSCH

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# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 6,1 a

5. Edition

En

PES 6 A 85 D 410/3 RS 2366 EP/RSV 325-1400 A8B674D, 707 D 325-1150 A8B674D, 707 D

supersedes 1.84 company: K H D

engine. BF 6 L 913

RS 2415

RS 2532

Instructions P.3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1.9 + 0.1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	9	4,1 - 4,5	0,4			
	6	0,6-1,4				
200	9	0,6 - 1,4 1,4 - 2,2				ı
			<u> </u>	<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

EP/RSV 325-1400 A8B674D, 707D

Degree deflect of cont lever	of tion trol	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rewmin 5	Control roct travel mm	4 Lower Degree of deflection of control lever 7	rated:spe rav/min 8	control rod travol mm- 9:	3 Tor	Control rod travel
ca.	69	1400 1450 1500	16,0 10,5 4,0	withou	ıt alıyı	oliary spr	ca. 20	325 200	19 - 21	1400	0
<b>5</b> .	68	1400 1510 1600	ca. 10,0 ca. 4,0 0,3 -1,5	ł		ary spring		325 500 650	5,2-5,8 1,2-3,3 0 - 1,5	500	1,2-1,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	pad stop	6 Rotational- speed limitat.	6 Rotational- speed limitat. 3a Fuel delivery characteristics			fuel delivery	Sa) Idle stop	
Test oil tem rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3'	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	. 0,7 bar		LDA	0,7 bar				
,		Instructions F	. 3		100	119,5-129,5	325	5,5**
			LDA 500	0 bar 57.5-59.5				
(Incre	ease by <u>+</u> 1,0	¢m³)		3177-2097				./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **B.** Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	rque control Control rod travel mm
ca. 50	1150 1200 1250	16,0 11,1 5,4	uri + k	out a	ıvolia	ca. 21 ry sprin	32 20	0 19 - 21	1130	0
<b>2</b> a	1220 1300 1380	7,5-10,4 1,3-3,6 0,3-1,5				spring	<sup>9</sup> 32 50 66	0   1,4-3,4	500	1,0-1,2

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	Rotational- speed limitat	11.321	iel delivery paracteristics	Starting I	fuel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2 0.7 bar	Note: changed to) rev/min	rev/min 4LDA	cm <sup>3</sup> /1000 strokes 5 0.7 bar	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm 9
1 LDA	- 0,7 bar	Instructions			100	119,5-129,	5; 325	5,5**
			LDA 500	0 bar 57.5-59.5				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

Testoil-ISO 4113

500

rev/min decreasing pressure – in bar gauge pressure

	<del></del>	<del></del>
Setting	Measuremer.t	diminution Control rod travel- XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Gauge pressure = bar	Gauge pressure = bar	mm MXX
0,38	0,10	0,2 - 0,3 1,6 - 2,0
		·
	Gauge pressure = bar	Gauge pressure = bar  O,38  O,10

Notes:

(1) when n =

gauge pressure =

bar (= maximum full-load control rod travel)

En

engine po Full-load o Control-ro Test oil tei	lelivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	tuel delivery ng point	Intermediate rotational speed Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
	,	13	4	15	6	17	8	

Testoil-ISO 4113

1400 1400 1325 1325 1325 1250	88,0 - 90,0 84,0 - 86,0 90,5 - 92,5 87,5 - 89,5 82,5 - 84,5 87,0 - 89,0	1420 1420 1340 1340 1340 1270	800 800 850 800 800	80,0 - 83,0 66,0 - 69,0 88,5 - 90,5 82,5 - 85,5 67,5 - 70,5 84,5 - 87,5	168 PS	/////	n = 2800 n = 2800 n = 2650 n = 2650 n = 2650 n = 2500
1250 1250 1200 1200 1165	83,0 - 85,0 81,0 - 83,0 86,0 - 88,0 78,0 - 80,0 84,0 - 86,0	1270 1270 1220 1220 1180	800 800 800 800 800	77,5 - 80,5 75,5 - 77,5 84,5 - 87,5 68,0 - 71,0 84,5 - 87,5	148 PS 140 PS 156 PS 135 PS 152 PS	/////	n = 2500 n = 2500 n = 2400 n = 2400 n = 2330
1150 1150 1100 1075 1075	83,5 - 85,5 60,0 - 82,0 82,0 - 84,0 82,0 - 84,0 78,0 - 80,0	1165 1165 1115 1090 1090	800 800 800 800 800	84,5 - 87,5 79,0 + 81,0 84,5 - 87,5 84,5 - 87,5 76,0 - 79,0	152 PS 142 PS 147 PS 144 PS 136 PS	1:11	n = 2300 n = 2300 n = 2200 n = 2150 n = 2150
1050 1000 1000 900 875	76,5 - 78,5 82,5 - 84,5 77,0 - 79,0 82,0 - 84,0 68,0 - 70,0	1065 1015 1015 910 885	800 800 800 800 800	73,5 - 76,5 84,5 - 87,5 79,5 - 82,5 84,5 - 87,5 66,0 - 69,0	130 PS 137 PS 130 PS 125 PS 106 PS	//////	n = 2100 n = 2000 n = 2000 n = 1800 n = 1750
750 750	85,0 <b>-</b> 87,0 78.0 <b>-</b> 80,0	760 760	-	-	105 PS 100 PS	/	n = 1500 n = 1500

#### Please note

- 1. \*\* With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 1.0 before the stop.
- 2. LDA adjustment to be carried out according to VDT-W-420/305.
- 3. Dimension H = 22.5 mm = basic setting of LDA.

WPP 001/4 FOR 4,2 d 1

1. Edition

En

PES 6 A 85 D 210 RS 2379 Z

RSV 550 - 1150 A 5 B 737 L

Komb.-Nr. 0 400 866 068

supersedes

Ford England company 360 CID

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,5 -2,6 (2,45-2,65)

**Testoil-ISO 4113** 

mm (from BDC) RN=9 mm,

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm=/100 strokes	mm 6
1000	8,8 - 8,9	5,2 - 5,3	0,3 (0,45	)		
550	6,5 - 6,7	1,3 - 1,7	0,25(0,4)			
			ng differe 4 - 5° ca		control.rod	travel 9 mm

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3.) To	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod   travel		Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	9	rev/min	mm 11
loose	800	0,3-1,0	-	<del></del>	-	ca. 28	550	6,6		
10056	x =	4,25					550	6,5-6,7		
ca. 51	7,8	1190-1200					!	**		
(2a)	4,0 1410	1225-1250 0,3 - 1,7								

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Fu	ull-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting t	uel delivery 5	4a ldi	e stop
Test oil te rev/min 1	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to 1 rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm
100	52,0 - 53,0 (50,0 - 55,0)	1190-1200	-	-	-	<b>-</b> .	-	•

Checking values in brackets

# 1 mm less control rod travel than col. 2

3.84

Girschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 7. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Engrine en République Federale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

VDT-WPP 001/4 MAN 9,2 a

5. Edition

PES 5 A 95 D 410 LS 2426 Z

.. LS 2426, Z

RQ 250/1150 AB 839 DL

RQV 250-1150 AB 850 DL

supersedes 6.82

engine D 2555..

MX/MXF-192 PS M/MH - Z - 168 PS

1 - 3 - 5 - 4 - 2 je  $72^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1, 25-1, 45)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
1000	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

2426 Z mit 839 D

Checkin	ck (1)	Full-load speed regulation Setting point Test specifications			cifications (4)	ldle spei Setting p	oint		cifications (5)			
rev/min	Control rod travel mm	rev/min 3	Control rod travel mm	Control rod travel rnm 5	rev/min 6	rev/min 7	rod travel mm 8	rev/min 9	travel mm	rev/min	travel	
600	15,7-16,3	600	16,0		15,0-15,4 10,0-14,4	540	0	150 250			15,8-16,0 14,4-15,6	
				1250 1320	0 - 9 C	•		350 440	1,5-4,9	1000	15,3-15,4	
							•					

Torque-control travel on flyweight assembly dimension a =

0,2

1190 - 1205 min<sup>-1</sup> Speed regulation. At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delin	rery characteristics 3b	Starting Idle spec	fuel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	rod travel cm <sup>3</sup> /1000 strokes:/ mm 7
2426 1150	Z 100,5 - 102,5 ( 98,5 - 104,5)	-	800 500	104,0 - 107,0 (102,0 - 109,0) max. 103,5 (max. 105,5)	100	146,5-156,5 =15,7- 16,3 mm RW

Checking values in brackets

3.84

BOSCH

Geschaftsbereich KH. Kundendienst, Kfz-Ausrustung. & 1980 by Robert Bosch GmbH. Postfach Sü. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

#### **B.** Governor Settings

Upper rated sp	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	leeve travel
deflection of control		Control rod travet mm rev/min	$\stackrel{\smile}{\sim}$	Degree of deflection of control lever	rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
ca. 50	1170 1220 1280 1350	3  14,4-17,  9,0-14,  1,0-7,  0	4	-	<u>.</u>	-	ca. 13	50 150	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,4	200 480 800 1180	0,5-1,2 3,2-4,0 5,0-5,4 8,4

Torque control travel a =

0,4 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	stop	Rotational speed (2b) limitation intermediate speed	Fuel deliv high idle s	rery characteristics (5a) speed (56)	Starting Idle switchir	_	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a)	rev/min 4	cm 1/1000 strokes 5	rev/min 6	cm /1000 strokes	rev/min 8	travel mm 9
1150	114,5-116,5 (112,5-118,5)		800 500	114,0-117,0 (112,0-119,0) max. 113,5 (max. 115,5	250 <b>Cha</b> n	146,5 - 156,5 7 mm RW ge-over point 100 min-1	500	0 0,3-0,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Testoil-ISO 4113

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated spe	ed	Lowerrated	speed		Sliding s	eeve travel
Degree of deflection		Control rod (1a)	Degree of deflection	1	Control rod pravel	Degree of deflection	1	Control rod travel		1
of control lever	rod travel	mm rev/min (2a)	of control lever	rev/min	mm 4	lever 01 control	rev/min	mm ③	tea/wiu	mm
١,	2	3	4	5	6	7	8	9	10	11
ca. 50	1170 1120 1280 1350	14,4-17,4 9,0-14,0 1,0- 7,8		-	<b>-</b>	ca. 15	50 150 250 350	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,41	480 80G	0,5-1,2 3,2-4,0 5,0-4,4 8,4
		_				(3a)	410	0 		

Torque control travel a =

0,4 <sub>mm</sub>

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-toad de Control-roo Test oil tem rev/min	•	Rotational-speed (2b) Ilmitation Intermediate speed rev/min	nigh ide s	cery characteristics (5a) (5b) (5b) (cm <sup>3</sup> /1000 strokes	Starting Idle switchin rev/min	ng point	Torque- travel rev/min	Control rod travel
1,	2	3	4	5	6	7	8	9
1150	109,5-111,5 107,5-113,5)	1190-1205*	500	112,0-115,0 110,0-117,0 max. 112,5 max. 114,5)		146,5-156,5 = 15,7- 16,3 mm RW 7 mm RW ge-over point 00 min-1	50 <b>0</b>	0 0,3 <b>-</b> 0,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

0

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 6,1 i 4. Edition

En

PES 6 A 85 D 410/3 RS 2415 Komb.-Nr. 0 400 836 023 RQV 300-1250 AB 1131 L

supersedas 83 companyKHD engine: BF 6 L 913 T 96 KW bei 2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke (1	,9 -2,0 .85-2.05)	mm (from BDC)	mm (from BDC)								
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)						
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm						
1	2	3	4	2	3	6						
1250	12,0+0,1	7,8 - 7,9	0,3(0,45	)								
300	8,4-8,6	1,0 - 1,6	0,2(0,4)			7						
		<del>]</del> ]										
						·						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed rev/min	Control rod	(E)	Degree of Control rod			Lower rated Degree of	sp <del>ee</del> d	Cantrol rod	Sliding sleeve travel	
of control	Control rod travel mm 2	ravei	(a)	deflection of control lever	rev/min 5	mm 4	deflection of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
max.	1385	15,2-17	,8	-	•	-	ca. 17	100	min. 10,0	250	0,9~1,1
ca. 65	11,0 4,0 1525	1415-14	45				450-550	!	8,4-8,6 705 =2,0		3,9-4,1 5,4-5,6 7,8
							<b>3</b>			<u> </u>	

Torque control travel a = 0,9 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed 2b Ilmitation Intermediate speed		very characteristics (5a)	Starting Idle switchin	. •	Torque- travel	Control rod	
fev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
1250	78,0-79,0 (76,0-81,0)	1290-1300*	600	71,5-73,5 (69,0-76,0)	100	105,0-115,0 (102,0-118,0) =17,4- 17,8 mm RW	600	12,0+0, 12,8+0, 12,3+0,	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

BOSCH

WPP 001/4 KHD 19,0 i 1. Edition

Er

PE12 A 95D 610 LS 2453 RQV 300-1150 AB 1086 L

Komb.-Nr. 0 400 640 105
1- 4- 9- 8- 5- 2-11- 10- 3- 6- 7- 12
0-15-60-75-120-135-180-195-240-255-300-315°+ 0,5° (+ 0,75°)

Supersedes companyKHD

engine F 12 L 413 F 247 kW/2300 min -1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,7-8,8	8,2 - 8,4	0,3(0,6)			
300	5,9-6,1	1,3 - 1,9	0,7(0,9)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	qe Celer e	eed	Lower rated	speed	1	Sliding sleeve travel	
Degree of deflection	rev/min Control	Control rod (18	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		
of control lever	rod travel	mm rev/min (2:	of control	rev/min	mm 4	of control lever	rev/min	mm ③		mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 23	100	min. 7,5	250 550	0,3-0,5 2,5-2,7
ca. 60	7,7	1190-1200 1225-125					300	5,9-6,1	850 1150	4,5-4,7 7,8
	1350	0-1,0				450-520 ③				

Torque control travel a = 0,9 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro- Test oil ten		Rotational-speed 20 invitesion invermediate speed	Fuel deliv	rery characteristics (5a)	Starting Idle switchir	, •	Torque- travel	Control rod	
rev/min	cm³/1600 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
1150	81,5-83,5 (79,5-85,5)	1190-1200*	800	89,0-92,0 (87,0-94,0)	100	120,0-130,0 (117,0-133,0)		9,6-9,	

Checking values in brackets

\* 1 mm less control rod travel than col. 2



**Testoil-ISO 4113** 

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 19,0 m

2. Edition

PE 12 A 95 D 610 LS 2453

ROV 300-900 AB 1090 L

supersede . 83

Komb.-Nr. 0 400 640 108

company: KHD

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 3150 + 0,50 (+ 0,750)

engine: F 12 L 413 FW 177 kW (240 PS) 1800 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC) (1,95-2,15)Control rod travel Control rod travel **Fuel delivery** Fuel delivery Spring pre-tensioning (torque-control valve) Rotational speed Difference rev/min cm<sup>3</sup>/100 strokes 100 strokes mm cm3/100 strokes 9,2-9,3 6 00 7,2 - 7,40.35(0.6)300 5.9 - 6.11,0 - 1,60,35(0,55)

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated :	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding sleeve travel	
	Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection of control		Control rod travel		
of control lever	rod travel	rev/min 28	of control lever	rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm .
1	2	3	4	5	6	7	8	9	10	11
max.	925	15,2-17,8	-	-	-	ca. 24	100	min.7,5	250	0,5-0,7
ca. 59	7,4	940- 950			,		300	5,9-6,1	470	4,0-5,2
Ca. 33	4,0	980-1010					345-4	05 = 2,0	680	6,2-6,5
	1100	0 - 1,0							900	8,2
						<b>3</b>	<u> </u>			

0,8 mm Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  cev/min   cm³/1000 strokes		Rotational-speed 20 limitation intermediate speed	(3)		Idle	fuel delivery 6	Torque- travel	Control Control rod
1	2	3	4	5	6	7	8	9
600	72,0-74,0 (70,0-76,0)	940-950*	750 850	60,5-83,5 (78,0-86,0) 72,5-75,5 (70,0-78,0)	100	19,0-21,0 mm RW	900 500 710 855	8,4+0, 9,2+0, 8,9+0, 8,5+0,

Checking values in brackets

\* 1 mm less control rod travel then col. 2

40

WPP 001/4 KHD 4,1 c 2

2. Edition

En

supersedes 11.83 company KHD F 4 L 913

Road-building machine 59 kW/2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

PES 4 A 80 D 410/3 RS 2523

Komb.-Nr. 0 400 864 058

Port closing at prestroke

(1,85-2,05)

mm (from BDC)

Rotational speed	Control rod	Control rod Fuel delivery travel		Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>2</sup> /100 strokes 3	mm 6
1250	11,6+0,1	6,9-7,0	0,25(0,4)			_[
325	8,2-8,4	1,0-1,6	0,2 (0,35)			

RSV 325-1250 A 8 B 540-1 L

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3.) To	rque control
Degree of deflection of control lever		Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800 X=	0,3-1,0 4,0	-	-	-	ca.17	325 100 325	6.5 min.19,5 6,9-7,1	1250 500 965	11,6-11,7 12,1-12,2 11,8-12,0
ca.56	10,6 4,0 1555	1290-1300 1390-1420 0,3-1,7					630-69	,	303	11,0512,0

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop  Test oil temp. 40°C (104°F)  rev/min cm³/1000 strokes		Rotational- speed limitat Note: changed to ) rev/min	speed limitat characteristics characteristics		Starting f Idle rev/min	uel delivery 5	<b>69</b>	Control rod travel mm
1250	68,5-69,5 (67,0-71,0)	1290-1300*	800	64,5-66,5 (62,5-68,5)	-	_	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2



3.84

WPP 001/4 KHD 6,1 d

3. Edition

PES 6 A 80 D410/3 RS2527

EP/RSV 325-1150 A8 B2014DL

supersedes

Komb.-Nr. 0 400 866 084

KHD company F6 L912 engine

74kW (102PS) / 2300min-1

DX 110tractor

S 31

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 1,90-2,00

Port closing at prestroke (1,85-2,05)

**Festoil-ISO 4113** 

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm*100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,6 - 5,7	0,2(0,35)			
325	+0,1 8,9-9,1	0,8 - 1,2	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	ediate rat	ed speed	Control- lever deflection in degrees		raled speed  Control rod  travel  mm	IL S J	rque control Control rod travel mm
loose	800	0,3-1,0		_I*	<u> </u>	ca.23	325 100	8,5 min.19,5	1150 950 775	11,8+0,1 12,0+0,2 12,5+0,2
ca.58	10,8 4,0 1350	1190-1200 1235-1265 0,3-1,7					325 390-450	8,9-9,1 = 2,0	450	12,5+0,2

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) F	ull-load stop	Rotational- speed limitat	Starting fuel delivery 5 4a idle stop					
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to .) rev/min 3	rev/min	cm <sup>9</sup> 1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200*	775	54,0-56,0 (52,0-58,0)	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 MB 5,7 v 11

3. Edition

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 1141 L

supersedes 6.83

Komb.-Nr. 0 400 876 293

Daimler-Benz company

OM 352 A engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

123 kW (157 PS) Schmidt rotary snow plough for high altitudes

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery (1) cm¥100 strokes 3	Ditterence cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,7+0,1	7,2-7,3	0,3(0,45)	9,8-9,9	5,4-5,6	
350	7,9-8,1	0,8-1,4	0,2(0,4)	7,9-8,1	0,8-1,4	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed   Control rod   travel   mm   2		Interme	diate rate	d speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod   trave:   mm   11
loose	800 x =	0,3-1,0 6,0	-	-	•	max.14	100 350	min.16,0		
ca.64	10,7 4,0 1680	1420-1430 1520-1550 0,3-1,7					580-640	7,9-8,1 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

9	emp 40°C (104°F)	Rotational- speed limitat	speed limital characteristics		Starting (	luel delivery 5	ldle stop	
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strckes 5	rev/min	cm\$1000 strokes 7	rev/min 8	travel mm 9
LDA 1380	(1) 0,7 bar 72,0-73,0 (70,0-75,0)	1420-1430*	LDA 600 LDA 500	0,7 bar 68,0-71,0 (65,5-73,5) 0 bar 48,5-49,5 (46,5-51,5)	100	78,0-88,0 (75,0-91,0 = 16,3 - 16,7 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col 2



#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees	Lower	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 6,0	-	-	-	ca.31	350 100	8,0 19,0-21,0	1200 650	9,8-10,0 11,3-11,5
ca. 74	8,8 4,0 1635	1440-1450 1470-1500 0,3-1,7					350 440-490 600	7,9- 8,1 = 2,0 0,3- 1,0		

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat	11.34	uel delivery naracteristics	Starting Idle	Starting fuel delivery 5		4a Idle stop	
rev/min 1 (2)	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min	r/min cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
LDA 1380	0,7 bar 54,5-56,5 (52,5-58,5)	1440-1450*	LDA 1000 600 LDA 500	0,7 bar 60,2-62,2 (58,2-64,2) 65,2-67,2 (63,2-69,2) 0 bar 53,0-55,0	100	78,0-88,0 / 16,4- 16,8 mmRW		-	

Checking values in brackets

#### \* 1 mm less control rod travel than col. 2

## Testoil-ISO 4113

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A RS 2596		0,70	12,8 - 12,9
(1)	0,40	0 0,21	11,2 - 11,3 12,5 - 12,6 11,8 - 12,0
(2)	0,52	0,70 0 0,21	12,3 - 12,4 10,4 - 11,5 12,0 - 12,1 10,8 - 11,0
		,	

Notes:

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

En Testing the hydraulic start-locking device

Locking at Unlocking at

0,45 - 0,55 bar 0,25 - 0,35 bar Testoil-ISO 4113

40

WPP 001/4 KHD 1 o

3. Edition

En

PES 6 A 95 D 410 RS 2625

Komb.-Nr. 0 400 876 305

RSV 325-1150 A8B 674 DL

supersedes 9.83

company: KHD engine: B F

e: BF6L913B

Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9' - 2,0 (1.85-2,05)

mm (from 8DC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed	<u></u>	Intermediate	rated spe	ed	4 Low	er rated spe	ed	3 To:	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	•	-	ca. 15	325	6,8	1150 500	11,4+0, 12,1+0,
	X =	","					325	7,2-7,4	1000	11,8+0,
ca. 50	10,4							5 = 2,0		
	1325	0,3 - 1,7								<u> </u>

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	pad stop	6 Rotational- speed limitat. (3a) Fuel delivery characteristics				fuel delivery	(5a) Idle stop	
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min cm³/1000 strokes 5		rev/min cm³/1000 strokes 6 7		rev/min 8	Control rod travel mm
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800 LDA 500	0,7 bar 83,0-86,0 (80,5-88,5) 0 bar 56,5-59,5 (54,5-61,5)	100	116,5-126,5 (113,5-129, = 15,9 - 16,4 mm RW	5)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 1 o

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PES 6 ARS 2625 withA8B 674 DL	0,7	0	12,2 - 12,3
WICHAOB 074 DC		0,36	11,1 - 11,2 11,9 - 12,0
		0,2	11,1 - 11,3
		·	

Notes

(1) when n =

rev/min and gauge pressure

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

WPP 001/4 KHD 1 g 3

7. Edition

En

PES 4 A 85 D 410/3 RS 2638

RSV 325-1150 A 0 B 2168 L A 0 C 2168 L supersedes 11.83 KHD company

BF 4 L 913 engine 66 kW (90 PS)

Symbol S 29 =

2300 min<sup>-1</sup>

tractor DX 92 (1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

60 kW (82 PS)  $/ 2300 \, \text{min}^{-1}$ 

A. Fuel Injection Pump Settings

Symbol \$28 =

DX 86 (2) tractor BF 4 L 913 T

**estoil-ISO 4113** 

(2,45-2,65)

mm (from BDC)

Spring pre-tensioning

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm\$100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	8,2 - 8,3	0,3(0,45)	10,6+0,1	7,5-7,6	
325	7,7-7,9	0,9 - 1,5	0,2(0,4)	7,7-7,9	1,0-1,6	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

(1) Uppe	er rated speed	i rev/min	Interme	diate rated	speed	L ower rated speed			3 torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
loose	800 X =	0,3-1,0 4,0	-	•	-	ca.29	325 100 325	7,3 min.19,5 7,7-7,9	500	11,8+0,1 12,3+0,1 12,0+0,2	
ca.53	10,8 4,0 1495	1190-1200 1325-1355 0,3 - 1,7					700-760	= 2,0	303	12,010,2	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp=40°C (104°F)	Rotational- speed limitat		iel delivery aracteristics	Starting f Idle	uel delivery 5	tale stop		
rev/min	cm³/1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>#</sup> /1000 strokes	rev/min 8	travel mm 9	
(1) 1150	80,5-81,5 (78,5-83,5)	1190~1200*	800	79,0-82,0 (76,5-84,5)	100	108,5- 118,5 = RW 16,9 - 17,4	•	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control	deflection of control mm mm rev/min lever.			Intermediate rated speed			rev/min	Control rod travel mm	1 4	rque control Control rod travel mm
loose	800	0,3-1,0	-	5	-	ca.26	325	7,0	1150	10,5+0,1
6د.ي	9,6	1220-1230					325	min.19,0 7,4-7,6	500 900	11,2+0,1
23	4.0 1475	1325-1355 0,3-1,7					720-780	= 2,0		

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Ful	II-load stop	6 Rotational- speed limitat		el delivery paracteristics	Starting f	uel delivery (5)	idle stop	
rest oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1		Note: changed to) rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm 9
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	300	65,5-68,5 (63,5-70,5)	100	108,5-118,	5 -	-
	,							

Checking values in brackets

## Testoil-ISO 4113

1 mm less.control rod travel than col. 2

## **B.** Governor Settings

Degree of deflection of control lever	rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Interme	ediate rate	speed	Control- tever deflection in degrees 7	rev/min	rated speed Control rod travel mm	rev/min	rque control Control rod travel mm
29										

## C. Settings for Fuel Injection Pump with Fitted Governor

Pull-load stop Test oil temp. 40°C (104°F)		Rotational- speed limitat.		el delivery aracteristics	Starting fuel delivery 5		Idle stop Control rot	
1	cm³/1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7		9 9
·								
						1		

Checking values in brackets En

Testoil ISO 4113

WPP 001/4 KHD 1 g 1

3. Edition

En

PES3A85D410/3 RS 2642 RSV325-1150A8B2102-1L Komb.-Nr. 0 400 863 007 1 - 3 - 2 je 120° ±0,5° (± 0,75°) supersedes company: KHD engine F3L 9

F3L 913 42 kW (57 PS) 2300 min Schlepper D 6007-S23

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.45-2.65)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)		
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm		
1	2	3	4	2	3	6		
1150	11,5+0,	7,1-7,3	0,3 (0,4	•				
325	8,9-9,	1 1,7-2,3	0,2 (0,4	)				
	ļ					2		
				ļ,				
	]		i	1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

			Intermediate rated speed  Degree of			4 Lowe	r rated spe	3 Torque control		
deflection of control lever	rev/min	travel mm	deflection of control lever	rev/min	travel mm	deflection of control lever	rev/min	travel mm	rev/min	travei mm
1	2	3	4	5	6	7	8	9	.10_	.1.1
lose	800	0,3-1,0	-	-	-	ca.20	325	8,5	1150	11,5+0,
	χ=						100 325	min.19,0 8,9-0,1		11,8+0, 11,6+0,
5 ca.5	4 10,2	1190-1200						545=2,0		
	4,0	1265-1295				į				
	1350	0.3 -1.7	ion bos			<u> </u>	<u> </u>	l	·	L

\*\* Set speed regulation before torque control

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop  Test oil temp. 40°C (104°F)  rev/min cm³/1000 strokes 1 2		6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	5a Idle stop	
		Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	ev/min cm³/1000 strokes		Control rod travel mm 9
1150	70,5 <b>-</b> 73,5 (68,5 <b>-</b> 75,5)	1190-1200 #	700	66,0-67,0 (64,0-69,0)	100	133,5-143,	5 -	-

Checking values in brackets

\*1 mm less control rod travel than col. 2 2.84

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RAB 10,8 a

Edition

PES 6 A 100 D 410 RS 3039

RSV 475-950 A 1 B 2121 L

supersedes 8 . 82 company RABA

184 kW (250 PS) engine

Komb.-Nr. 0 401 276 051

A 1 C 2121 L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
950	13,6+0,1	15,2-15,4	0,3 (0,6	<u> </u>		
475	5,9-6,1	1,2-1,6	0,3 (0,5	þ		
	}	İ		1		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	(3) Tot	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel
]1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	•	ca.27	475	5,5	950	13,6+0,1
loose	X =	3,75						min.19,5 5,9-6,1	500 840	15,3+0,2 14,4+0,2
€9. 49	12,6 4,0 1195	990-1000 1030-1060 0,3-1,7						630 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	pad stop	6 Rotational- speed limitat.	Rotational-speed limitat.     Speed limitat.     Speed limitat.     Rotational-speed limitat.     Rotational-speed limitat.			fuel delivery	Sa) Idli	Sa) Idle stop	
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm	
LDA 950	0,7 bar 152,0-154,0 (150,0-156,0)	990-1000*	LDA 750 LDA 500	0,7 bar 180,0-184,0 (178,0-186,0) 0 bar max. 149,0 (max. 151,0		-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

RAB 10,8 a

Test at n =

Pump/governor

500

PES 6A..RS 3039 with..A 1 B 2121L

rev/min decreasing pressure - in bar gauge pressure

Measurement

Gauge pressure

pressure			-2-
nent		diminution Control rod travel- difference	
essure =	bar	mm (1)	
		15,3 - 15,4	
0		13,7 - 13,8	
0,55		15,0 - 15,1	
0,42		14,1 - 14,3	
			İ

Notes

(1) when n =

rev/min and gauge pressure =

Setting

Gauge pressure 🤏

0,7

bar ( = maximum full-load control rod travel)

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 PP 001/4 VOB 7,0 a and Governors

1. Edition

PE 6 P 100 A 320 RS 256

ROV 250-1200 PA 212/2 R

supersedes companyolvo-BM engine D 70 B

Sleeve position 36,0 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	2,8-2,9 2,75-2,95)	mm (from BDC	)		
Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3-13,1	0,5			
600	9 12	5,2-6,2 11,1-12,4				
200	15 9	16,6-18,2 3,2-4,2				

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rodtravel	travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	1
1	2	3	4	5	6	7	8	9	10	11
max. ca. 66	1560 1200 1300 1400	15,1-18,2 8,0-13,1 0 - 7,3	-	-	-		120 250 350 500 570	8,3-10,0 6,2-8,2 3,3-5,4 0 - 2,5 0	1290	8,2
	1520	0				<b>3</b> a				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delivingh idle :	very characteristics (56)	Starting Idle switchir	. •	Torque- travel	Control Control roc
tev/win	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
t	2	3	4	5	6	7	8	9
700	73,0-75,0	1230-1240*	-	•	100	230,0-270,0	-	•
					225	10,0-16,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2



2

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/ 4 DAF 11,6 o5 1. Edition

<u>n</u>

PE6P 110 A 320 RS 372 Komb.-Nr. 0 401 846 405 RO 250/1100 PA 428/2R

supersedes\_

company: DAF

engine DKTL 1160

Testoil (50 & 13

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,7

nm (from 8

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring-pre-tensioning (torque-control valve) mm 6
850 250		14,0-14,2 0,7- 0,9	0,4(0,8) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che	g of slider ck Control roc	1	Full-load : Setting po	•	•	cifications (4)	Idle spec Setting p	•		cifications 5	Torque	Control rad
rev/min 1	travel		rev/min 3	red travel mm	red travel mm 5	rev/min 6	rev/min 7	rod travel mm 8	rev/min 9	travel mm 10	rev/min	travel mm 12
700	15,6-1	6,4	700	16,0		1145-1160 1220-1250 0-1,0		6,8	250	min. 8,3 6,7- 6,9 80 = 2,0	-	-
•	ontrol travel			_					1145-	1160 min.	1	1 mm less cont

Torque-control travel on flyweight assembly dimension a =

നന

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	relivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	rery characteristics	Starting I	Control
rev/min 1	cm³/-1000 strokes	rev/min	rev/min	cm³/~1000 strokes 5	rev/min	rod travel cm <sup>3</sup> /1000 strokes/ mm 7
LDA 850	0,5 bar 140,5-142,5 (137,5-145,5)	-	LDA 600	0 bar 136,5-139,5 (133,5-142,5)	100	240,0-280,0 =20,0-21,0 mmRW

Checking values in prackets

3.84

DAF 11,6 o5

-2-

Testatn =

600

rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6PRS 372 +RQPA 428/2R	0,70	0 0,30	12,3-12,4 12,0-12,1 12,1-12,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

H17

0

# Test Specifications Fuel Injection Pumps 1 and Governors

WPF 001/4 HIP 11,9a1 1. Edition

En

PE6P 110 A 720 RS 380 Komb.-Nr. 0 401 846 501

ROV 250-1000 PA 434-2

supersedes

companyHispavinsa engine BSR 36 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	15,5+0,1	18,8 - 19,0	0,4(0,75)			
250	8,5-8,7	2,4 - 3,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		   Stiding s	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod travel	<b>(e)</b>	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	mm	rev/min		lever	rev/min	mm 4	lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	100	15,2-17,	8	•	-	-	ca. 15	250	min. 10,0 8,5- 8,7	370	,1-1,2 2,5-3,5
ca. 46	4,0	1040-105 1170-120	0		·			310-3	70 = 2,0	430 1045	8,8-4,0 7,9
	300	0-1,0					<u>3a</u>				

Torque control travel a = - m

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delivingh idle s	rery characteristics 5a	Starting Idle switching	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/100f/strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1000	0,7 bar 188,0-190,0 185,0-193,0)	1040-1050*	LDA 500	0 bar 141,0-144,0 138,5-146,5)	-	-	-	<u>-</u>

Checking values in brackets

\* 1 mm less control rod travel than col. 2 3.84



Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

HIP 11,9a1

Pump/gavernor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6PRS 380 +RQVPA 434-2	0,70	0 0,45 0,31	15,5-15,6 13,2-13,3 15,0-15,1 13,7-13,9

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 11,6 v 1. Edition

En

PE6P110 A 320 RS 407-1

RSV 275-1000 P5/458-3

supersedes DAF

Komb.-Nr. 0 401 876 275

engine DKCL 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,8 - 2,9
Port closing at prestroke (2,75- 2,95)

Testoil-150 4113

mm (from BOC) RW = 9,0 - 12,0 mm

Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm#100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm=/100 strokes	mm 6
12,3+0,1	13,8-14,1	0,4 (0,75)			e
7,0-7,2	1,0-1,5	0,45(0,75)			
	mm 2 12,3+0,1	travel mm 2 cm //100 strokes 3 12,3+0,1 13,8-14,1	travel mm 2 cm <sup>1</sup> /100 strokes 2 cm <sup>2</sup> /100 strokes 4 12,3+0,1 13,8-14,1 0,4 (0,75)	travel mm 2 cm*/100 strokes 2 cm3/ 100 strokes 4 cm3/ 100 strokes 2  12,3+0,1 13,8-14,1 0,4 (0,75)	Control rod travel   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup>3</sup> /100 strokes   Cm <sup></sup>

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) Uppe	er rated speed	rev/min	Intern	nediate rate	d speed	4	Lowe	er rated speed	11 3 /	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	rravel mm 11
loose	800 x	0,3-1,0 = 4,5	-	, <del></del>	-	ca.23	275 275	7,0-7,2	1000	
ca.48	10,1 4,0 1325	1040-1050 1160-1190 0,3-1,7					675-7	35 = 2,0	750 850	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(4)	emp 40°C (104°F) cm³/1000 strokes	Rotational- speed limitat Note changed to 1 rev/min 3	11.32	cel delivery laracteristics cm³/1000 strokes	Starting findle	cm <sup>3</sup> /1000 strokes	Control rod travel mm	
LDA 500	0,7 bar 137,5-140,5 (135,0-143,0)	1040-1050*	LDA 1000 LDA 600	0,7 bar 114,5-119,5 (111,5-122,5) 0 bar 135,5-138,5 (132,5-141,5)	100	245,0-265 (241,0-269	7,1	

Checking values in brackets

# 1 mm less control rod travel than col 2

3.84

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung © 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

rev/min increasing pressure - in bar gauge pressure Test at n = 600 noitunimite Measurement Setting Control rod travel-Pump/governor aitterence (1) bar | Gauge pressure = par :mm Gauge pressure = 12,3-12,4 0,70 PE6P..RS 407-1 12,1-12,2 12,2-12,3 0 0,28 +RSV..P5/458-3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

DAF 11,6 v

-2-

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 7,0 i 1. Edition

PE 6 P 110 A 320 RS 465

Komb.-Nr. 0 401 876 267

RSV 650-750 P4/421

supersedes companyVolvo-Penta engine TD 70 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15)

mm (from BDC) RW = 9.0 - 12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>1/100</sup> strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
700 650	12,5+0,1	13.1-13.3	0,4(0,75)			2,5± 0,1 (2,2-2,9)
					\$A.	

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interm	ediate rat	ed speed	(4)	Lowe	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	control rod travel mm	rev/min	Control rod travel mm
10000	800	0,3-1,0	-	•	-	ca. 33	650	6,1	-	-
loose	x= 3	,25	Î				650	6,0-6,2		
ca. 37	11,5 4,0 925	750-755 775-785 0,3-1,7				. 1	660-7	00 =2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	11.34	uei delivery naracteristics	Starting fi	uel delivery 5	da Idle stop		
Test oil te rev/min t	emp 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	Note changed to rev/min	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm <sup>2</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
700	131,0-133,0 (128,0-136,0)	750-755*	-	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. £ 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

Testoil:50 4:113

②

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MB 9,6 f 3. Edition

Er

PE 6 P 100 A 320 LS 805 RQ 900 PA 310 R Komb.-Nr. 0 401 846 393 1- 6- 3- 5- 2- 4 0-75-120-195-240-315°+ 0,5° (+ 0,75°) supersede9.78

company Daimler-Benz
OM 401
engine 110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benchés and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (3,35-3,55

mm (from BDE)1. 6

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
850	10,7+0,	9,8-10,0	0,3(0,6)			
350	7,8-8,	2,3-2,8	0,3(0,5)			
				1		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	g of stider		Full-load		-			ed regula			Torque (	_
PRG che	ck Control rod travel	(1)	Setting po	Control	Control	cifications (4)	Setting p	Control red travel	Test spe	Control rod		Control rod
rev/min			rev/min	rod travel	rad travel	rev/min	rev/min	UUU)	rev/min	travel mm	rev/min	travel mm
1	2		3	4	5	6	7	8	9	10	11	12
•	•		-	-	9,7 4,2 1050	915-920 940-950 0-1,0	-	-	-	-	-	-
										4		
	ontrol travel		L	<u> </u>	<u> </u>	<u> </u>	L	<u> </u>	915-9	20 min	L	1 mm less con

Torque-control travel on flyweight assembly dimension a =

Speed regulation:

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	(25)	Starting f	ruel delivery
r <del>ov</del> /min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min	cm <sup>3</sup> /1000 strokes·/ mm
850	98,0 - 100,0 (96,0 - 102,0)	-	-	-		100 945	110,0-130,0 4,1- 4,3 mmR max.Streuung 4 (6)

Checking values in brackets

3.84

②

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,6 f2

1. Edition

En\_

PE 6 P 100 A 320 LS 805 Komb.-Nr. 0 401 846 383

1- 6- 3- 5- 2- 4 0-75-120-195-240-315°+ 0,5°(+ 0,75°) supersedes\_

company Daimler-Benz engine OM 401 139 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

3.35-3.55

mm (from BDC)

RQ 750 PA 374 R

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
700	11,2+0,	9,9-10,1	0,3(0,6)	2	3	6
350	7,8-8,	2,4-2,9	0,3(0,7)			: :
						· •
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checkine PRG che	g of slider ck	1	Full-load s	load speed regulation Idle speed regulating point Test specifications (4) Setting point				cifications (5)	Turque control			
	Control rod travel mm 2		rev/min 3	Control rod travel rnm 4	Control rod travel rnm 5	rev/min	rev/min 7	Control rod travel m.m 8	rev/min 9	Control rod travel mm	rev/min	travel
-	-		-	-	10,2 4,8 850	750-755 780-790 0-1,0	•	-	-	-	•	•
									50-75		1	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	36)	Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /- 1000 strakes 5		rev/min	cm <sup>3</sup> /1000 strokes/ mm
700	99,0-101,0 (97,0-103,0)	-	-	-		100	110,0-130,0 (106,0-134,0)

Checking values in brackets

3.84

WPP 001/4 MB 9,6 f1 1. Edition

En

PE 6 P 100 A 320 LS 805 Komb.-Nr. 0 401 846 394

RO 1150 PA 407

supersedes

companyDaimler-Benz engine OM 401

132 kW (179 PS)

1- 6- 3 - 5- 2- 4 0-75-120-195-240-315°+ 0,5° (+ 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

3,4 -3,5 (3 35<sub>=</sub>3 55) mm (from BDCZy1. 6

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11.1+0.	1 10.8-11.0	0,3(0,6)			
350	7,8-8,	p 2,3- 2,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

1	Checking of slider PRG check Control rod Control		pint	Test spec	cifications (4)	Idle speed regulation Setting point Test specifications 5				Torque control		
rev/min	Control rod travel mm 2	rev/min	control rod travel rnm 4	Control rod travel rnm 5	rev/min	rev/min 7	Control red travel rnm 8		Control rod travel mm	rev/min 11	Control rod travel mm 12	
	-	-	-	10,2 4,1 1300	1155-1160 1195-1205 0-1,0	-	•	-	-	-	•	

Torque-control travel on flyweight assembly dimension a =

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Speed regulation: At 55-1160 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delivery characteristics			Starting f	ruel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	rod travel cm <sup>3</sup> /1000 strokes/ mm
1100	108,0 - 110,0 (106,0 - 112,0)	-	-	-		100	110,0-130,0
	·				1	200	4,0- 4,2 mmRl Streuung max. 4 (6)
							max. 4 (0)

Checking values in brackets

3.84

2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 WPP 001/4 MB 12,862 and Governors

4. Edition

PE 8 P 100 A 320 LS 810

RO 300/1250 PA 187 R

supersed 8.83 company Daimler-Benz

Komb.-Nr. 0 401 848 038

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ )

engine OM 402 188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,4 - 3,5mm (from BDC2v1. 8 Port closing at prestroke (3.35-3.55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring-pre-tensioning (torque-control valve) mm 6
1250	10,6+0,	1 10,2-10,4	0,3(0,6)			
300	7,4-7,	6 1,3- 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	Full-load spo			cifications (4)	Idle spec	_		cifications (5)	Torque o	(3)
Control rod travel rev/min 1 2	) ro	1	Central red travel rnm	rev/min	rev/min	Control rod travel rnrn 8		Control rod travel mm 10	rev/min	Control rod travel mm 12
600 13,8-14,6	600	14,2	9,6 4,0 1500	1295-1310 1345-1375 0-1,0		7,5	300	min.9,0 7,4-7,6 345= 2,0	1250 600	10,6-10,7 10,6-10,8

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	Control	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rad travel cm <sup>3</sup> /1000 strokes:/ mm 7	
1250	102,0 - 104,0 (100,0 - 106,0)	600	600	77,0 - 82,0 (74,5 - 84,5)	100	110,0 - 130,0 (106,0-134,0)	

Checking values in brackets

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 12,8 c 3. Edition

PE 8 P 100 A 320 LS 819

RSV 350-1100 PO/809 DR

Ďaimler-Benz

Komb.-Nr. 0 401 878 082 1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

company OM 402 220 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

3,4 -3,5 Port closing at prestroke (3,35-3,55)

Testoil-ISO 4113

mm (from BDQJy]. 8

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1080	9,3-9,4	8,2-8,4	0,35 (0,6)			
350	7,5-7,7	2,0-2,5	0,35 (0,55			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

1 Uppe	r rated speed	t rev/min	Interme	ediate rate	d speed	4	Lowe	r rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	1	0,3-1,0 4,75	-		•	ca.34	350	7,6 **	1080 900	9,3-9,4 9,3-9,4
ca. 56	8,3 4,0 1300	1120-1130 1180-1210 0,3-1,7							600	9,8-10,0

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting (	uel delivery 5	4a Idle stop		
rev/min	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes S	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1080	82,0-84,0 (80,0-86,0)	1120-1130*	600	76,0-80,0 (73,5-82,5)	100	110,0-130 (106,0-134	0 -	-	
					·				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. £ 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Féderale d'Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 12,8 c 1

1. Edition

En

PE 8 P 100 A 320 LS 819 Komb.-Nr. 0 401 878 085 RSV 350-1250 P0/810

supersedes

companyDaimler-Benz

engine OM 402 256 PS

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,4 -3,5 Port closing at prestroke (3,35 -3,55)

Testol-150 4113

mm (from BDC) v1. 8

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm=/100 strokes	mm
1	2	3	4	2	3	6
1230	10.2+0.1	10.0-10.2	0,3(0,6)			
350	7,4-7,6	1,5- 2,1	0,3(0,5)			
				ĺ		
_		<u> </u>	1 _			

Adjust the fuel delivery from each outlet according to the values in  $\square$ 

## **B. Governor Settings**

(1) Uppe	er rated speed	rev/min	Intermed	diate rated	speed	(A)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	revimin 10	Control rod travel mm
100se	300 x =	0,3-1,0 5,0	-	•	-	ca.38	350	7.5 **		-
ca.66	9,2 5,0 1440	1260-1270 1330-1350 0,3 - 1,7					500-560	=2,0		

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	uli-load stop	6 Rotational- speed limitat		iei delivery iaracteristics	Starting t	ruei delivery 5	(4) idi	e stop
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm=/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	100,0-102,0 ( 98,0-104,0)	1260-1270*	-	•	100	110,0-130 (106,0-134		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 6. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Féderale d'Allemagne per Robert Bosch GmbH.

# **Test Specifications** Fuel Injection Pumps 1 PP 001/4 SCA 11,0 r and Governors

PE 6 P 110 A 720 RS 3040, I...Z RQV 250-1100 PA 379 R

supersedas 83 compa@cania engine DS 1101

Komb.-Nr. 0 401 846 710

All test specifications are valid for Bosch Fuel Injection Pump Test Senches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	3,3-3,4 3,25-3,45)				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,	15,5-15,7	0,6(0,8)			3,3 ± 0,1
225	4,4-4,6	1,7-2,1	0,2(0,4)			(3,0-3,5)
	ı		1	}	1	<u> </u>

Adjust the fuel delivery from each outlet according to the values in [

## **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Slidina s	leeve travel
deflection of control	rev/min Control rod travel		of control		Control rod travel	Degree of deflection of control	rev/min	Control rod travel	rev/min	1
lever 1	mm 2	rev/min (2a)	lever	rev/min 5	mm (4)	lever 7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 10	100 225	min.5,9 4,4-4,6		1,0-1,2 3,8-4,0
ca. 64	12,0 4,0 1400	1140-1150 1250-1280 0 - 1,0				(3a)		70 = 2.0	800 1100	5,4 <b>-</b> 5,6 8,5

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros		Rotational-speed 2b imitation intermediate speed		Fuel delivery characteristics 5e Starting fuel delivery high idle speed 5b Idle switching point		. •	6 Torque-control 5 travel		
revimin		rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	ten/wiu		rev/min	travel mm	
]1	2	3	14	5	6	7	8	9	
LDA 1100	0,9 bar 155,0-157,0 (15 <b>3</b> ,0-159,0)	1140-1150 *	LDA 600 LDA 500	0,9 bar 160,5-163,5 (158,0-166,0 0 bar 128,0-132,0 (126,0-134,0		240,0-290,0 = 20,0-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500 rev/min decreasing pressure - in bar gauge pressure

SCA 11,0 r -2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure ⇒ bar	mm (1)
PE 6 PRS 3040 + RQV PA 379R	0,90	0 0,37 0,25	13,0 - 13,1 11,7 - 11,8 12,7 - 12,8 11,8 - 12,0

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Increased or reduced outputs of the types listed on page 1

# Testoil-ISO 4113

Output variation	Output %	Fuel deliv	ery in	cm <sup>3</sup> /1000	strokes	Adjustment of control-rod position from 100%
Variation	N	1100	900	750	600	setting (mm)
Р	120	205	208	212	214	+ 2,6
U	115	191	196	198	200	+ 1,9
R	113	186	191	192	195	+ 1,7
W	110	180	185	185	188	+ 1,3
٧	108	175	179	179	183	+ 1,0
γ	105	170	173	172	177	+ 0,7
τ	103	166	167	166	171	+ 0,4
S	98	154	156	156	158	- 0,2
X	95	146	149	149	150	- 0,5
Q	93	141	145	145	146	- 0,8
Ž	· 90	134	138	139	140	- 1,1
0	88	131	134	136	137	- 1,3
N	85	124	126	130	131	- 1,6
М	80	114	115	119	121	- 2,1
L	75	105	106	108	111	- 2,6
K	70	98	<del>9</del> 8	98	99	- 3,0
J	65	89	90	90	90	- 3,4
Ī	60	86	84	83	80	- 3,8

<sup>1)</sup> Tolerances with fuel quantity are  $\pm$  1 cm $^3$  at setting speed.

With subsequent orders from KH/ALP only the standard setting according to page 1 will be delivered. If required, the above mentioned variations are to be carried out through your local BOSCH Service Station.

The delivery amounts given in the table have been compiled from Saab-Scania documentation upon their request.

2

**estoil-ISO 4113** 

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 SCA 11,0 r 1 5. Edition

En

PE 6 P 110 A 720 RS 3040 Komb.-Nr. 0 401 846 717

RQ 250/1100 PA 411 R

company Scania engine DS 11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{pmatrix} 3, 3 - 3, 4 \\ (3, 25 - 3, 45) \end{pmatrix}$ 

mm (from BD,C)RW = 9,0 - 12,0 mm

rev/min n 1 2	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1100	13,0+0,	1 15,5-15,7	0,6(0,8)			3,3+0,1
225	4,4-4,	6 1,7-2,1	0,2(0,4)			(3,0-3,5)

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checkin PRG che	ck 1 Control rod travel	Full-load s Setting po rev/min	oint Control	Test spec Control red travel	rev/min	idle spec Setting p rev/min	Control red travel		cifications Control rod travel mm	Terque o	Control rod (3)
700	15,6-16,4	700	16,0	12,0 4,0 1350			4,5	100 225	min. 5,9 4,4-4,6 360 =2,0	-	-

Torque-control travel on flyweight assembly dimension a =

നന

1145-1160min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/ mm 7	
LDA 1100	0,9 bar 155,0-157,0 (153,0-159,0)	• •	LDA 600 LDA 500	0,9 bar 160,5-163,5 (158,0-166,0) 0 bar 128,0-132,0 (126,0-134,0)	100	240,0-290,0 =20,0- 21,0 mm RW	

Checking values in brackets

3.84

BOSCH

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Test at n =

500

rev/min increasing pressure - in bar gauge pressure

SCA 11,0 r 1

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P RS 3040 +RQ PA 411 R	0,90	0 0,37 0,25	13,0-13,1 11,7-11,8 12,7-12,8 11,8-12,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

J9

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 ROL 12,2 b 1. Edition

PE 6 P 120 A 320 RS 3042

ROV 350/650-750 PA 386 R

supersedes

1 - 4 - 2 - 6 - 3 - 5 je  $60^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

companRolls Royce engine C 6 TCA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	itroke (	3,4 -3,5 3 35-3 55)	mm (from BDC)	mm (from BDC)								
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)						
ev/min mm		cm³/100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6						
720	14,8+0.1	31,9-32,3	0,5(0,8)									
350	4,3-4,5	1,4~ 1,8	0,4(0,7)									

Adjust the fuel delivery from each outlet according to the values in [

## **B. Governor Settings**

Testciliso 4113

	1	Control rod (travel		Degree of deflection deflection deflection deflection				leeve travel		
lever n	rod travel mm 2	mm rev/min (2 3	of control lever 4	rev/min 5	mm 4 6	of control lever 7	rev/min 8_	mm (3	rev/min 10	mm 11
max.	730	15,2-17,	8 ca.38	13,8	675-685	ca.12	100		325 350	0,5-1,6
ca. 65	13,8 4,0 900	750 - 75 775 - 78 0 - 1,	5	4,0	715-745	(3e)	350 645-7	4,3-4,5 05 =2,0	600	1,9 <b>-</b> 2,1

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b timitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)			fuel delivery 6	Torque-control 5 travel  Control rot	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev'min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
720	319,0-323.0 (316,0-326,0)	750 - 755*	-	-	100	17-18 mm R4	-	-
					350	14,0-18,0		
						·		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 ROL 16,2 a 1. Edition

PE 8 P 120 A 920/4 RS 3047

Komb.-Nr. 0 401 848 707

RQ 750 PA 416 R

company Rolls Royce

engine C 8 TCA 250 kW (340 PS)

1 - 6 - 2 - 5 - 8 - 3 - 7 - 4 je  $45^{\circ} + 0,5^{\circ} (+ 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

mm (from BDC)  $PW = 9 \Omega - 12 \Omega$  mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700 300	14,4+0,1 6,1-6,3		0,5 (0,9) 0,8 (1,2)	Í		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	necking of slider  Full-load speed Setting point			•	-	cifications (4)	ldle sper Setting p	-		cifications (5)	oraue control		
rev/min	Control rod travel mm	· ·	rev/min	Control red travel mm	Control rod travel rnern 5	rev/min	rev/min 7	Control rod travel rmm 8	rev/min 9	Control rod travel mm	rev/min	Control rod travel	
-	-		-	-	13,4 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-	
	ontrol travel							7	50-75	5 min 1		1 mm less control	

on flyweight assembly dimension a =

Speed regulation: At

rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting to	Contret
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/ mm 7
700	247,0-251,0 (244,0-254,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 ROL 16,2 a 1
1. Edition

En

PE 8 P 120 A 920/4 RS 3047 Komb.-Nr. 0 401 848 716

RQ 900 PA 491

supersedes

company: Rolls Royce engine: C 8 TCA 250 kW (340 PS)

1-6-2-5-8-3-7-4 je  $45^{\circ} \pm 0.5^{\circ}(\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,45-3,65)

mm (from BDE) RW= 9.0 - 12.0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	14.4+0.	24.7-25.1	0,5 (0,9)			
300	6,1-6,	3 3,8- 4,4	0,8 (1,2)			
		ļ				
	l					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che	g of slider ack	<b>\</b> 1	Full-load speed regulation Setting point Test specific			Idle speed regulation (4) Setting point   Test			cifications (5)	Torque control	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control red travel mm 5	rev/min 6	rev/min 7	Control levest bon mm 8	rev/min	Control rod travel mm	rev/min 11	Control rod travel mm
•	-	•		13,4 4,0 1050	900-905 932-941 0-1,0	•	•	-	-	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: 300-905 min-1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strakes 2	rev/min	rev/min 4	cm³/-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes/ mm	
850	247,0-251,0 (244,0-254,0)	-	-	-		100	19,5-21,0 mm RW	

Checking values in brackets

3.84

40

WPP 001/4 SAU 12,0 d 1

1. Edition

En

PES 6 P 120 A 420 RS 3049-1 RQ 300/1100 PA 687 1 - 4 - 2 - 6 - 3 - 5 je 60° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: Saurer engine: D4KTM 235 kW

Komb.-Nr.0 402 046 744

Alt test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at presi		2,8 -2,9 2,75-2,95)	mm (from BDC)								
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
1100 300	11.7+0. 3,9-4,		0,5(0,9) 0,8(1,2)	i							

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che	g of slider ck	Full-load :	•	_	cifications (4)	idle spe	•		cifications (5)	Turquir (	control 3
rev/min	Control rod travel mm 2	rev/min	Control red travel rnm 4	Control rad travel rnm 5	rev/min	rev/min 7	Control rod travel rmm	rev/min 9	Control rod travel mm	rev/min 11	Control rod travel
750	13,1-13,9	750	13,5	10, 4, 135	0 1200-123	<b>3</b> 0	4,(	300	min. 5,4 3,9-4,1 425=2,0	920 825	11,7-11,8 12,0-12,3 12,5-12,7 12,7-12,8

Torque-control travel on flyweight assembly dimension a =

0,45 mm

1145-1160 min<sup>-1</sup>

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever p. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	1	Starting fuel delivery idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm		
LDA 1100	0,7 bar 199,0-201,0 (196,0-204,0)	-	LDA 700 LDA 400	0,7 bar 211,0-217,0 (208,0-220,0) 0 bar 123,0-127,0 (120,0-130,0)	100	200,0-230,0		

Checking values in brackets

3.84

Testatn =

ENN

rev/min decreasing pressure - in bar gauge pressure

SAU 12,0 d1

-2-

500			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 PRS 3049-1 +RQ PA 687	0,70	0 0,40 0,20	12,7-12,8 10,1-10,2 12,3-12,4 10,4-10,6

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

J14

## ①

esto: | 150 4113

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 15,8 e

3. Edition

<u>Er</u>

PE 10 P 110 A 920/5 LS 3073 RQV 300-1250 PA 549-1 Komb.-Nr. 0 401 849 704 1-10= 9- 4- 3- 6- 5- 8- 7- 2 0-72-72-99-144-171-216-243-288-315°+ 0,5° (+ 0,75°)

supersed&s.83
companyKHD
engine: BF 10 L 413 F
294 KW (400 PS) (1)
265 KN (360 PS) (2)
bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Porticiosing at prestroke (2,8-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,1+0,1	14,9-15,1	,4 (0,8)			
300	6,3-6,5	1,1-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Slidina s	ieeve travel
Degree of deflection of control lever	rod travel	Control rod travel mm rev/min	(a) (26)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1300	15,2-17	,8	-	-	-	ca.22		nin.8,2 6,7-6,9	250 580	0,5-0,8 2,9-3,1
ca.66	11,1 4,0 1500	1290-130 1370-140 0-1,0	00				B20-500		<b>0,</b> 7 0,3	920 1250	4,8-5,0 8,0
							39				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics 5a peed 5b	idie	fuel delivery . (6)	Torque- travei	Control cod
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	_	rev/min	travel mm
(1) LDA 1250	0,7 bar 149,0-151,0 (147,0-153,0	1290-1300*	LDA 900 LDA 500	0,7 bar 144,0-146,0 (142,0-148,0) 0 bar 94,0- 96,0 ( 92,0- 93,0)		130,0-150,0 (126,0-154,0) =13,0- 13,2 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2 2 . 84

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed	1	Sliding si	eeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever		Control rod travel mm 3	rev/min	1 mm 11
	=										
-									•		
							<u>3</u> a				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil terr	•	Rotational-speed (2b) timitation intermediate speed	character high idle s	ristics	(%) (%)	Starting Idle switchin	luel delivery 6	Torque-	Control cod
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min (43)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	•	rev/min 6	cm <sup>1/</sup> 1000 strokes 7	rev/min 8	mm 9
(2) LDA 1250	0,7 bar 135,0-137,0 (133,0-139,0)	1290-1300*	LDA 900 LSA 500	0,7 bar 128,0-131, 126,0-133, 0 bar 94,0- 96, (92,0- 98,	,0) ,0	100	130,0-150,0 (126,0-154,0) =13,0- 13,2 mm RU	•	-

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE10PLS 3073 +RQVPA 549-1	0,90	0 0,59 0,51	12,1-12,2 10,1-10,2 11,5-11,6 10,7-10,9

Fn

①

Testricted 4113

**Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 13,8 q

1. Edition

PE 6 P 120 A 720 RS 3123

ROV 300-900 PA 501-1

supersedes =

Komb.-Nr. 0 401 846 787

Fiat company. 8210.22.105 engine

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

243 kW

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
900	13,2+0,	21,6-21,8	0,5(0,9)		3	
300	6,0-6,2		0,8(1,2)			
300	,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				

Adjust the fuel delivery from each outlet according to the values in [

### **B. Governor Settings**

Upper rated s	speed			Intermediate	rated sp	eed		Lower rat	ed:	speed			Sliding s	ieeve travel
Degree of deflection of control	rev/min Control rod trave	travel	(E)	Degree of deflection of control		Control travel	rod	Degree of deflection of control	١ إ		Control ro			①
lever 1	mm 2 <u>s</u> .	۱ (	20	lever 4	rev/min	mm 6	•	levar 7		rev/min 8	9	(3)	rev/min	
max.	995	15,2-17	,8	-	-		-	ca. 1	0		min.7, 6,0-6,		325 550	1,2-1,4 3,8-4,5
ca.65	12,2	940-950 1035-106								300	2,00,	-	800 900	6,6-7,0 7,8
	1200	0-1,0						375-4	90	)				
								<b>3</b>						

Torque control travel a

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load ( Control-ro Test oil te			Fuel delin		Starting idle switchin	. •	Torque- travel	Control (5)
rev/min	cm³/1000 strokes	rew/min 49	Len/Luitu	cm <sup>3</sup> /1 <b>000</b> strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 216,0-218,0 (213,0-221,0		LDA 500 LDA 500	0,9 bar 235,0-241,0 (232,0-244,0 0 bar 143,0-145,0 (140,0-148,0		240,0-260,0 (236,0-264,0)		-

Checking values in brackets

\* 1 mm less control ... travel then col. 2

FIA 13,8q

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Giminution Control rod travel- differe⊝ce
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P RS 3123 +RQV PA 501-1	0,90	0 0,46 0,32	13,2-13,3 10,0-10,1 12,4-12,5 10,6-11,0

Notes

revimin and gauge pressure =

par (= maximum full-load control rod travel)

it) when n 🧸

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 11,0 e 1 .
1. Edition

<u>En</u>

PE 6 P 120 A 320 LS 3810 RSV 350 - 1150 PO/810 1- 6- 3- 5- 2- 4 0-75-120-195-240-315° ± 0,5° (± 0,75°)

companyDaimler-Benz engine OM 421 A 184 KW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 876 733

#### A. Fuel Injection Pump Settings

4,0 -4,1 Port closing at prestroke (3,95-4,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>2</sup> /100 strokes	mm 6
1130	10,3+0,1	15,5-15,7	0,5 (0,9)			
350	4,7-4,9	1,6- 2,2	0,8 (1,2)			
¢	assembly	ly apply to te 1 688 901 019 680 750 067			st	

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

(1) Uppe	r rated speed	I rev/min	Interme	ediate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod   travel   mm rev/min   3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod   travel   mm   9	rev/min	Control rod travel mm
loose	800 x =	0,3-1,0 4,75	-	-	-	ca. 36	350 100	4,8 min. 19,5	-	-
ca. 56	9,3	1175-1185					350	4,7 - 4,9	1	
<b>2a</b>	4,0	1250-1270					380-44	0 = 2,0		

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>4</b>	ul-load stop	6 Rotational- speed limitat	11301	uel delivery Paractenstics	Starting	tuel delivery 5	<b>4a</b> ) Id	e stop
rev/min	emp 40°C (104°F) cm-/1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
	155,0 - 157,0 152,0 - 160,0)	1175-1185*	-	-	100	140,0-160, 136,0-164,	0 - 0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

**BOSCH** 

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 2. 1980 by Robert Bosch GmbM. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d Allemagne par Robert Bosch GmbM.

Testoil-130 4:113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 a 1

2. Edition

PE 6 ZW 150/120 RS 70/11

RQU 250-350/1100 ZWA 46 DR

Replaces 11.83

Komb.-Nr. 0 402 436 033

1- 2- 3 - 4 - 5 - 6 0-45-120-165-240-285° ± 0,5° (± 0,75°) Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing a	it prestroke	2,50-2,60 (2,45-2,65)	mm (from BDCZy]	. 6	
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min <sup>-1</sup>	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	İ
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	-
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100		C Sp. 2	1		
350		C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min 1	Control- rod travel mm min 1	Control lever flection degrees 4	min '	Control- rod travel mm 6	Control lever de- flection degrees 7	min-'	Control- rod travel mm 9	min-1 10	Control- rod travel mm 11
ca.58		18,0 17,5-18,0 11,7-16,0 3,0-10,0 0-1,0	ca.27	1	14,1-16,4 10,2-11,8 7,4-7,6 2,0-2,7 2,0 1,8-2,0		150 220 250 400 520	11,1-13,2 8,0-8,7 7,6-7,8 2,7-4,5 0	-	•

Torque control travel a =

mm

Speed regulation: At 1130-1140 minmi less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gov	d delivery ernor control lever Il temperature 40°)	Control rod stop at speed	Fuel-de charac	elivery teristics	Startii	ng fuel ery
min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes 2	min <sup></sup>	min 4	cm³/1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH

Geschaltsbereich KH. Kundendienst. Kfz-Ausrustung
by Robert Bosch GmbH. Dit Stuttgart 1. Postfach 50. Printed in the Federal Republic. It German,
imprime en Republique Federale in Allemagne par Robert Bosch GmbH.

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 g

2. Edition

PE 8 ZW 150/120 RS 74/11 RQU 250-350/1100 ZWA 46 DR

Replaces 83 Firm: MTU

Komb. Nr. 0 402 438 011

EngineMB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \stackrel{+}{=} 0,5^{\circ} (\stackrel{+}{=} 0,75^{\circ})$ 

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60(2,45-2,65) rom BDZy1. 8

Rotational speed min-1	Control- rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0(15,0)	33,0-61,0	
1100 350		C Sp 2 C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor settings

Upper rated	speed		Medium ra	ited spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min 2	Control- rod travel mm min **	Control lever flection degrees 4	min - ' 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	Control- rod travel mm 11
ca.58	650 1100 1150 1200 1280	18,0 17,5-18,0 11,7-16,0 3,0-10,0 0 - 1,0	ca.27		14,1-16,4 10,2-11,8 7,4-7,6 2,0-2,7 2,0 1,8 <sub>0</sub> 2,0		150 220 250 400 520	11,1-13,2 8,0-8,7 7,6-7,8 2,7-4,5	-	-

Torque control travel a =

mm

Speed regulation: At 1130-1140 minim less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact	•	Startin deliver	
min-1 1	cm <sup>3</sup> /1000 strokes 2	min-1	min 4	cm <sup>2</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	•	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
•						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

# Test specifications Fuel injection pumps and governors



WPP 001/4 MTU 19,9 b
6. Edition

<u>En.</u>

PE 6 ZW 150/120 RS 1001/11 RQUV 300-1200 ZWA 48 R Komb.-Nr. 0 402 436 038 1 - 2 - 3 - 4 - 5 - 6 0 - 45-120-165-240-285° + 0,5° (+0,75°) Replaces 1.83

Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65)

mm (from BDZyl. 6

Rotational	Control	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min ·	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	
			Ì		
			1		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min <sup>-1</sup> 3	Control lever flection degrees 4	min .	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min : 10	Control- rod travel mm 11
ca. 85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0	ca. 30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1 0	ca.23	300 400 570	7,3-8,6 2,8-4,3 0	-	<u>-</u>
	L						200 40	40 min-1		<u> </u>

Torque control travel a =

mm

Speed regulation: At 1230-1240 min less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever Il temperature 40°)	Control ro at speed	od stop	Fuel-de charac	elivery teristics	Startin	
min '	cm <sup>3</sup> /1000 strokes	min <sup>-1</sup> 3	Idle	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7
120	18 mm RW		OC' ,O mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 c 2. Edition

PE 8 ZW150/120 RS 1002/11

ROUV 300-1200 ZWA 48 R

 $1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 \text{ je } 45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Note VDT-W-Gen./7

Replaces 11.83

MTU

Engine MB 8 V 331

Komb.-Nr. 0 402 438 012

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2.45-2.65)

mm (from BDQy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	
ı					

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated Control lever deflection degrees	mm min 1 2	Control- rod travel mm min :	Medium ra Control lever flection degrees 4	min '	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min '	d   Control-   rod   travel   mm   9	rnin- 10	e control Control- rod travel mm
ca.85	1200	8,0-21,0	ca. 30	250	12,2-14,	ca.23	150	14,3-16,1	-	-
	1250 1300 1350 1420	12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0		375 500 600 730	6,0-7,2 2,6-3,7 0,8-2,1		300 400 570	7,3-8,6 2,8-4,3 0		
	<u> </u>	<u> </u>		<u>i                                    </u>	<u> </u>	1	20 12	10 = = 1	<u> </u>	1

Torque control travel a =

Speed regulation At 1230-1240 minm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-de charac	elivery iteristics	Starting fuel delivery		
min 1	cm <sup>3</sup> /1000 strokes	min Leerlauf	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
1200	18 mm RW	300 = 8,0 mm RW	i i	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

WPP 001/4 MTU 19,9 c1 2. Edition

\_\_\_\_

PE 6 ZW 150/120 RS 1007/11 RQU 250-400/1100 ZWA 49 R

Komb.-Nr. 0 402 436 043 1 - 2 - 3 - 4 - 5 - 6

 $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$ 

Replaces .83

Engine MB 6 V 331

Note VDT-W-Gen./7

Governor adjustement according to VDT-I-420/112

All test specifications apply anly to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings 2,50-2,60

Port closing at prestroke (2,45-2,65)

mm (from BDZ)1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min- :	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	
		į.			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated speed			Medium ra	Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm min- 2	Control- rod travel mm min :	Control lever flection degrees 4	min *	Control- rod travel mm 6	Control lever de- flection degrees 7	m <b>ւո</b> ։ 8	Control- rod travel mm 9	min 10	Control- rod travel mm 11	
ca. 58	1125		ca. 22	150 400 700 1100 1160	15,0-18,0 7,8-8,8 1,8-2,4 1,8-2,4 0		150 250 400 530	9,8-11,9 7,8-8,2 2,3-4,5 0	-	-	

Torque control travel a =

mm

Speed regulation: At 1130-1140 minnim less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-de cnarac	elivery teristics	Starting fuel delivery		
min 1	cm <sup>3</sup> /1000 strokes	min Idle	min 4	cm <sup>3</sup> /1000 strokes	min 5	cm//1000 strokes	
1100	18 mm RW	300	•	-	100	18,0-18,2 mm RW	
		= 8,0 mm RW				Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

03.84

BOSCH

Geschaftsbereich keil Kundendienst inft Ausfüsfung. I. D. Robert Bosch Gmbh. O. 1 Stuttbarn 1. Postfach 50. Printed in the Federal Rebub. 11. 1. Bermisch. Imprimalen Republik Gue Feders alst em sgreiber Albert Bosch Gmbh.

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39.7 e

2. Edition

PE 12 ZW 150/120 RS 1008/11

ROUV 300-1200 ZWA 50 R

Replaces 11.83

Komb. Nr. 0 402 430 003 1-12-9-4-5-8-11-2-3-10-7-6

MTU Engine: MB 12 V 331

0-45-60-105-120-165-180-225-240-285-300-345°  $\pm$  0,5° ( $\pm$ 0,75°)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	t prestroke	2,50-2,60 (2.45-2.65)	mm (from BDC) Zy1. 12						
Rotational speed	Control- rod travel	Fuel delivery  Average value  cm <sup>3</sup> /1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes	Spring pre-tension (torque-control valve)				
1	2	3	4	5					
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-				
600 300	9,0 9,0	131,0-151,0 70,0-90,0	16,0 (24,0) 10,0 (15,0)	126,0-156,0 65,0-95,0					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min 2	Controi- rod travel mm min : :	Medium ra Control lever flection degrees 4	min-	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7		d Control- rod travel mm 9	min-1	e control Control- rod travel mm
ca.85		18,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a = 7

Speed regulation: At 1230-1240 minnih less control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gove	ernor control lever temperature 40°)	Control rod stop at speed	Fuel-de charact	livery teristics	Startin deliver	
min	cm <sup>3</sup> /1000 strokes	min Idle	min ·	cm <sup>3</sup> /1000 strokes	min 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300 · = 8,0 mm RW	_	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e 1

2. Edition

PE 12 ZW 150/120 RS 1008/11

RQUV 300-1200 ZWA 55 R

Replaces 11.93

1-12-9-4-5-8-11-2-3-10-7-60-45-60-105-120-165-180-225-240-285-300-345°  $\stackrel{+}{-}0,5$ ° ( $\stackrel{+}{-}0,75$ °)

5° ±0,5° (±0,75°) Engine: MB 12 V 331

Note VDT-W-Gen./7

Komb.-Nr. 0 402 430 002

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65) mm (from BDCZy1, 12

Rotational Control Fuel delivery Difference Fuel

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	
					·
	}				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ated spe	ed	Lower rat	ed spee		Torqu	e control
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	mın-	Control- rod travel mm 6	Control lever de- flection degrees 7	min - 1 8	Control- rod travel mm 9	min-1 10	Control- rod travel mm 11
ca.85	1200 1250 1300 1350 1420	18,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,0 6,0-7,2 2,6-3,7 0,8-2,1	!	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	•	<b>6</b> 0

Torque control travel a =

mm

Speed regulation: At 1230-1240 m1mmliess control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever temperature 40°)	Control rod stop at speed		Fuel-delivery characteristics		g fuel y i
min 1	cm <sup>3</sup> /1000 strokes	min Leerlauf	min '	cm³/1000 strokes 5	min 1	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300 = 8,0 mm RW	-		•	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

03.84

BOSCH

Testoil-150

### Test specifications Fuel injection pumps and governors En.

WPP 001/4 MTU 26,5 e 1

2. Edition

PE 8 ZW 150/120 RS 1009/11

ROU 250-400/1100 ZWA 49 R

Replaces 11.83

Komb.-Nr. 0 402 438 015

MTU Engine: MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Note VDT-W-Gen./7

Governor adjustement according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 mm (from BDC7v1 . 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	•
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	
			-		
					-

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ated spec	ed	Lower rat	ed spee	d		e control
Control lever deflection degrees	mm min-'	Control- rod travel mm min-1	Control lever flection degrees 4	min '	Control- rod travel mm 6	Control lever de- flection degrees 7	mın⁻' 8	Controi- rod travel mm 9	min-1	Control- rod travel mm 11
ca.58	700 1125 1150 1200 1300	18,0-18,5 17,6-18,0 12,0-17,0 0-7,5 0-1,0	ca.22	150 400 700 1100 1160	15,0-18,0 7,8-8,8 1,8-2,4 1,8-2,4 0		150 250 400 530	9,8-11,9 7,8-8,2 2,3-4,5 0	-	•

Torque control travel a = -

Speed regulation: At 1130-1140 minm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact	elivery teristics	Startin deliver	
min <sup>- i</sup> 1	cm <sup>3</sup> /1000 strokes 2	min-1 3 Leerlauf	min-1 4	cm <sup>3</sup> /1000 strokes 5	min- 1 6	cm <sup>3</sup> /1000 strokes 7
1100	18 mm RW	300 = 8,0 mm RW	-		100	18,0-18,2 mm RW Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e 2. Edition

PE 8 ZW 150/120 RS 1009/11

RQUV 300-1200 ZWA 50 R

Replaces 11.83 MTU

Komb.-Nr. 0 402 438 014 1-2-6-3-4-5-7-8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Engine MB 8 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings 2,50-2,60

Port closing at prestroke (2.45-2.65)

mm (from BDCIy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	
		ļ			
			<u> </u>	1	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min-1 2	Control- rod travel mm min <sup>-1</sup> 3	Medium ra Control lever flection degrees 4	min <sup>-1</sup>	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	1	Control- rod travel mm 9	min-1	e control Control- rod travel mm
ca.85	1200 1250 1300 1350 1420	18,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a =

Speed regulation: At 1130-1140 imm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		Startin deliver	
min 1	cm <sup>3</sup> /1000 strokes 2	min Idle	min <sup>- 1</sup> 4	cm³/1000 strokes 5	min 1 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300 : = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 a

6. Edition

PE 6 ZW 160/120 RS 1012/11

RQUV 300-900 ZWA 51 R

Replaces .83

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285° ± 0,5° (±0,75°)

EngineMT 6 V 396

Note VDT-W-Gen./7

Komb.-Nr. 0 402 436 053

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pumpgsettings

Port closing at prestroke (2.45-2.65)

mm (from BDC) Zyl. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
	İ				
	İ				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ted spe	ed	Lower rat	ed spee	1	Lordn	e control
Control lever deflection degrees 1	mm min - 1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min <sup>-1</sup> 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-' 8	Control- rod travel mm 9	min-1 10	Control- rod travel mm
ca. 85	920 950 1020 1090	14,4-18,6 4,0-10,2	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0		100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	•	•

Torque control travel a =

mm

Speed regulation: At 910-915 min 1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	ernor control lever il temperature 40°)	Control rod s at speed	stop	Fuel-de charact		Startin deliver	
min*! 1	cm <sup>3</sup> /1000 strokes 2	min 1 3 .	Idle	min '	cm³/1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	300 = 8 mm	Rw	•	•	-	<b>-</b>

Checking values in brackets

03.84

**BOSCH** 

Testoil-130 4113

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 b

2. Edition

PE 6 ZW 160/120 RS 1012/11 RQUV 750 ZWA 53 R

1 - 2 - 3 - 4 - 5 - 6

 $0 - 4\overline{5} - 120 - 165 - 240 - 285^{\circ} \stackrel{+}{=} 0,5^{\circ} (\stackrel{+}{=} 0,75^{\circ})$ 

Note VDT-W-Gen./7

Replaces 1.83 Engine MT 6 V 396

Komb.-Nr. 0 402 436 054

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings 2,50-2,60

mm (from BDC) Zyl. 6 Port closing at prestroke

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
	1		<b>[</b>		<u> </u>

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ated sne	ed	Lower rat	ed spee	đ	Torqu	e control
Control lever deflection degrees 1	mm min <sup>- 1</sup> 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min- 8	Control- rod travel mm 9	min 10	Control- rod travel mm 11
ca. 69	750 770 790 810	18,0 9,6-11,8 1,4-5,2 0	<b>-</b>	•	-	-	-	-	•	, <b>-</b>
					<u> </u>		<u> </u>	<u> </u>		

Torque control travel a =

Speed regulation: At 760-765 milmin less control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gov	ernor control lever it temperature 40°)	Control rod stop at speed	Fuel-de charact		Startin deliver	
min-1	cm <sup>3</sup> /1000 strokes	mun Leerlaufanschl.	min 4	cm³/1000 strokes 5	min '	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	•	-	•	-
			1		<u> </u>	

Checking values in brackets

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 23.8 c Edition

PE 6 ZW 160/120 RS 1012/11

**ROUV 900 ZWA 53 R** 

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285°± 0,5° (± 0,75°)

Note VDT-W-Gen./7

Replaces 1.83

MT 6 V 396

Komb.-Nr.

0 - 02 436 048

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

it prestroke		mm (from BDC)	Zyl. 6	
Control- rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
18,0 9,0 9,0	513,0-523,0 140,0-160,0 72,0-92,0	16,0 (24,0) 12,0 (18,0) 11,0 (16,0)	510,0-526,0 135,0-165,0 67,0-97,0	•
	rod travel mm 2 18,0	Control- Fuel delivery rod travel Average value mm cm <sup>3</sup> /1000 strokes 2 3 18.0 513,0-523,0 9,0 140,0-160,0	Control-	Control-

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ted spe	ed	Lower rai	ed spee	d:	Torqu	e control
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min · ˈ 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-1	Control- rod travel mm
ca. 70	900	18,0		-	-	-	-	-	-	-
	920 940 965	11,1-12,0 1,4-5,6 0								

Torque control travel a =

Speed regulation: At 910-915 min 1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min-1	cm <sup>3</sup> /1000 strokes 2	min idle stop	min <sup>1</sup> cm <sup>3</sup> /10		min · ' 6	cm³/1000 strokes 7
900	18 mm RW	12 mm RW	•	-	•	-

Checking values in brackets

WPP 001/4 MTU 23,8 f

2. Edition

PE 6 ZW 160/120 RS 1012/11 ROU 750 ZWA 56 R 1 -2- 3- 4- 5- 6 0-45-120-165-240-285° -+ 0,5° (+ 0,75°) Note VDT-W-Gen./7

Replaces 11.83 Firm: MTU Engine MT 6 V 396

Komb.-Nr. 0 402 436 045

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings 2 50-2 60

rod travel	Average value			(torque-control
	TATOLOGIC VALUE	in fuel delivery	Checking values	valve)
mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
2	3	4	5	
<u> 18,0</u>	513,0-523,0	16,0-(24,0)	510,0-526,0	-
9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
	18, <u>C</u> 9,0	2 3 18,0 513,0-523,0 9,0 140,0-160,0	2     3     4       18,0     513,0-523,0     16,0-(24,0)       9,0     140,0-160,0     12,0 (18,0)	2 3 4 5 18,0 513,0-523,0 16,0-(24,0) 510,0-526,0 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ited spe	ed	Lower rat	ed spee	d	Torqu	ie control
Control lever deflection degrees 1	mm min⁻¹ 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-1	Control- rod travel mm
ca. 52	750 720 750 770 780 800	18,0 25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0 0	-	-		•	-	-		•

Torque control travel a =

Speed regulation: At 760-765 minm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	id delivery ernor control lever il temperature 40°)	Control rod at speed	stop	Fuel-de charact	elivery eristics	Startin deliver	
min=1 1	cm <sup>3</sup> /1000 strokes 2	min-1 3	idle stop	min-1 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm³/1000 strokes 7
750	18 mm RW	12 mm	RW -	-	-	100 wit	ca. 20 mm RW h starting magnet

Checking values in brackets

WPP 001/4 MTU 23,8 d

2. Edition

Replaces 1.83

Firm: MTU

Engine: MT 6 V 396

Komb.-Nr.

0 402 436 046

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

RQU 900 ZWA 56 R

A. Fuel-injection-pump settings

1 - 2 - 3 - 4 - 5 - 6 $0 - 45 - 120 - 165 - 240 - 285 \stackrel{\circ}{-} 0,5^{\circ} (\stackrel{+}{-} 0,75^{\circ})$ 

Port closing at prestroke

Note VDT-W-Gen./7

PE 6 ZW 160/120 RS 1012/11

2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational	Rotational Control- Fuel		Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,0 mm

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spee	di j	Torqu	e-control
Control lever deflection degrees 1	mm min : 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min <sup>-1</sup> 8	Control- rod travel mm 9	min · '	Control- rod travel mm 11
ca. 52	900 860 880 900 930 960	18,0 26,8-32,4 22,3-26,3 17,0-19,0 3,7-10,0		•	-	-	•	•	•	•

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-delivery characteristics	Starting fuel delivery
min 1	cm <sup>3</sup> /1000 strokes 2	min idle stop	min cm <sup>3</sup> /1000 strokes 4 5	min cm <sup>3</sup> /1000 strokes 6 7
900	18 mm RW	12 mm RW	-	100 ca. 20 mm RW with starting magnet

Checking values in brackets

03.84

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Geschaftspereich KH, Kundendienst, Kfz-Ausrustung, by Robert Bosch GmbH, D-7 Stuftgart 1. Postfach 50, Printed in the Federa: Republic of Germany imprime in Republic 3 # Federale d Airemysche par Robert Bosch GmpH.

WPP 001/4 MTU 23,8 e

2. Edition

Replaces

11.83 Firm:

Engine: MT 6 V 396

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 57 R Komb.-Nr. 0 402 436 047 1- 2- 3- 4- 5- 6 0-45-120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	t prestroke	2,50-2,60	mm (from BDC)	Zyl. 6	
Rotational speed min-1	Control- rod travel mm 2	Average value cm <sup>3</sup> /1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control vaive)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
					<u> </u>

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

· Sleeve position 49,0 mm

Upper rated Control lever deflection degrees	mm min-1	Control- rod travel mm min-1 3	Medium ra Control lever flection degrees 4	min '	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ed spee min-! 8	Control- rod travel mm 9	min -1	e control Control- rod travel mm
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720 750 770 780	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0								

Torque control travel a =

Speed regulation: At 760-765 min min less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed	Fuel-delivery characteristics	Starting fuel delivery
(Test or	cm <sup>3</sup> /1000 strokes	min-1 3 idle stop	min cm³/1000 strokes 4 5	min cm <sup>3</sup> /1000 strokes 6 7
750	18 mm RW	12 mm RW		-

Checking values in brackets

03.84

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Testoil-150 4113

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 a

2. Edition

PE 8 ZW 160/ 120 RS 1013/11

RQUV 300-900 ZWA 51 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Replaces .83
Firm: MTU

Engine: MT 8 V 396

Note VDT-W-Gen./7

Komb.-Nr. 0 402 438 021

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,50-2,60 Port closing at prestroke (2,45-2,65)

mm (from BDZy]. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
	1				
	f				1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

deflection degrees 1 2 3	Control- rod travel mm min-1 3	Control lever flection degrees		Control- rod travel	Control lever deflection		Control- rod		Control- rod
950		4	min · i 5	mm 6	degrees 7	min-1 8	travel m <del>m</del> 9	min-1 10	travel mm 11
1030	18,0-21,5 14,4-18,6 4,0-10,2 0 - 2,0	ca. 30		13,0-15,0 10,0-11,5 8,0 2,5-4,2 0		100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	1	-

Torque control travel a =

mm

Speed regulation: At 910-915 minimm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever i temperature 40°)	Control ro at speed	d stop	Fuel-de charact		Startin deliver	
min-1 1	cm <sup>3</sup> /1000 strokes 2	min=\	Idle	min⊴ 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	30 = 8 n	OÒ nm RW		•		-

Checking values in brackets

03.84

BOSCH

Testoi-150 4113

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 31,7 b 2. Edition

PE 8 ZW 160/ 120 RS 1013/11

RQUV 750 ZWA 53 R

 $1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 \text{ je } 45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Firm: MTU

Engine: MT 8 V 396

Note VDT-W-Gen./7

Komb,-Nr. 0 402 438 022

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Rotational	Control-	45-2,65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed speed	t	Torqu	e control
Control lever deflection degrees	mm min-1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min- ' 8	Control- rod travel mm 9	min-1	Control- rod travel mm 11
ca. 69	750 770 790 810	9,6-11,8 1,4-5,2	-	•	••	-	-	,,5	•	•

Torque control travel a =

Speed regulation: At

760-765 minmless control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on geve	d delivery ernor control lever il temperature 40°)	Control rod stop at speed	Fuel-delivery characteristi		Starting fuel delivery		
min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes	min' idle stop	min <sup>-1</sup> cm <sup>3</sup>	3/1000 strokes	min ' 6	cm <sup>3</sup> /1000 strokes 7	
750	18 mm RW	12 mm RW	-	•	•	•	

Checking values in brackets

**Testoil-150 4113** 

WPP 001/4 MTU 31,7 c

2. Edition

PE 8 ZW 160/120 RS 1013/11

Note VDT-W-Gen./7

RQUV 900 ZWA 53 R

 $1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 \text{ je } 45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Replaces 1.83

MTU

Engine: MT 8 V 396

Komb.-Nr.

0 402 438 019

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

mm (from BDØy1. 8

Port closing at	prestione (Z	,45-2,65)	(		
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	cm <sup>3</sup> /1000 st/okes	
1,	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	51(),0-526,0	_
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
	}				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min-1 3	Medium ra Control lever flection degrees 4	min-1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min-1 8	d   Control-   rod   travel   mm   9	min-1	e control Control- rod travel mm
ca. 70	900 920 940 965	11,1-12,0 1,4-5,6	•	-	-	-	-	-		-

Torque control travel a -

Speed regulation: At 910-915 minimm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod at speed	stop	Fuel-de charact		Starting fuel delivery		
min-1	cm <sup>3</sup> /1000 strokes	min-1	idle stop	ள்ள் 4	cm <sup>3</sup> /1000 strokes 5	min-' 6	cm <sup>3</sup> /1000 strokes 7	
900	18 mm RW	12	mm RW		•	•	-	

Checking values in brackets

K13

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 f

2. Edition

RQU 750 ZWA 56 R PE 8 ZW 160/120 RS 1013/11

Replaces 1.83 Firm: MTU

Komb.-Nr. 0 402 438 016

Engine: MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	*	,50-2,60 _45-2,65)	mm (from BDZy1.	8	
Rotational	Control- rod travel	Fuel delivery Average value	Difference in fuel delivery	Fuel delivery Checking values	Spring pre-tension (torque-control valve)
min=1 1	mm 2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	_
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
•					
				ļ	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min-1	Control- rod travel mm min-1 3	Medium ra Control lever flection degrees 4	min-1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	1	d  Control-  rod  travel  mm  9	min-1	e control Control- rod travel mm
ca. 52	750 720	18,0 25,6-30,6	-	-	-	-	-	-	-	-
	750 770 780 800	17,0-19,0 6,8-11,8 0,5-8,0 0								

Torque control travel a = "

Speed regulation: At 760-765 minmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-delivery characteristics	Starting fuel delivery
min-1 1	cm <sup>3</sup> /1000 strokes 2	min-1 3 idle stop	mi <sup>3</sup> cm³/1000 strokes 4 5	min <sup>-1</sup> cm <sup>3</sup> /1000 strokes 6 7
750	18 mm RW	12 mm RW	•	100 ca. 20 mm RW with starting magnet

Checking values in brackets

Corrections

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 31,7 d 2. Edition

PE 8 ZW 160/120 RS 1013/11

RQU 900 ZWA 56 R

Replaces 11.83 MTU

Komb.-Nr.0 402 438 017 1-2-6-3-4-5-7-8 je  $45^{\circ}\pm0.5^{\circ}(\pm0.75^{\circ})$ 

Engine: MT 8 V 396

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2 45-2 65)

mm (from BDZy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
	1				
	1	1	1		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Sleeve position 49,0 mm

Upper rated	speed		Medium ra	ated spe	eđ	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees	mm min-1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travei mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-'	Control- rod travel mm
ca. 52	900	18,0	-	-	-	_	-	_	_	-
	860 880 900 930 960	26,8-32,4 22,3-26,3 17,0-19,0 3,7-10,0								

Torque control travel a

Speed regulation: At 910-915 mintinm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery			
min '	cm <sup>3</sup> /1000 strokes 2	min idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	min '	cm³/1000 strokes 7			
900	18 mm RW	12 mm RW	-	•	100 wi	ca. 20 mm RW th starting magne			

Checking values in brackets

03.84

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**Testoil-150 4113** 

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 31,7 e Edition

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R

 $1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 \text{ je } 45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Replaces 1.83 Firm: MTU

Engine: MT 8 V 396

Note VDT-W-Gen./7

Komb. = Nr. 0 402 438 018
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2 A5-2 65)

mm (from BD)C) 1

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	$I_{\rm rom}$	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> / .00 strokes	
1	1:	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
		1			1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,0 mm

Upper rated	speed		Medium ra	ted spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min** 3	Control lever flection degrees 4	min 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-	Control- rod travel mm 9	min 11	Control- rod travel mm
ca. 52	750	18,0	-	_	-	-	-	-	_	-
	720 750 770 780 800	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0								

Torque control travel a =

Speed regulation: At 760-765 inin mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	nd delivery ernor control lever il temperature 40°)	Control rod stop at speed		Fuel-delivery characteristics		g fuel Y 
min '	cm <sup>3</sup> /1000 strokes 2	min idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	min '	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	-	•	-	-

Checking values in brackets

Testoiles 4113

WPP 001/4 MTU 47,5 d

Edition

PE 12 ZW 160/120 RS 1015/11 RQUV 300-900 ZWA 51 R

Replace 11.83 MTU

Engine MT 12 V 396

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6 0-45-60-105-120-165-180-225-240-285-300-345°±0,5° (±0,75°)

Komb.-Nr. 0 402 430 006

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Note VDT-W-Gen./7

mm (from BDF)+1 12

speed	1				(torque-control
op cc c	rod travel	Average value	in fuel delivery	Checking values	Agine)
min-,	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spes	d.	Torqu	e control
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min == 3	Control lever flection degrees 4	min '	Control- rod travel mm 6	Control lever de- flection degrees 7	min ' 8	Control- rod travel mm 9	min <sup>-</sup> 10	Control- rod travel mm 11
ca. 85			ca.30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	•	100 300 450 570	14,2-16, 8,0 1,6-3,7 0		-

Torque control travel a = 3

Speed regulation: At 910-915 minfilm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d dalivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		Startin deliver	
min~1 1	cm <sup>3</sup> /1000 strokes 2	min Idle 3	min ' 4	cm <sup>3</sup> /1000 strokes 5	min   6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	300 = 8 mm RW	-	•	-	•
					<u> </u>	

Checking values in brackets

## Test specifications Fuel injection pumps and governors

PE 12 ZW 160/120 RS 1015/11 RQUV 750 ZWA 53 R

WPP 001/4 MTU 47,5 e

Edition

Replaces 11.83

MTU

Engine: MT 12 V 396

Komb.-Nr.

1-12-9-4-5-8-11-2-3-10-7-6  $0-45-60-105-120-165-180-225-240-285-300-345° ^{\pm}0,5° ( ^{\pm}0,75°)$ 

0 402 430 007

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,50-2,60 mm (from BDC)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speea	rod travel	Average value	in fuel delivery	Checking values	valve)
min	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	••
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated	speed		Medium ra	ated spe	ed	Lower rat	ed spee		Torqu	e control
Control lever deflection degrees	mm min-1 2	Control- rod travel mm min ' 3	Control lever flection degrees 4	mın 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min" '	Control- rod travel mm	min)	Control- rod travel mm 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770 790 810	9,6-11,8 1,4- 5,2 0								

Torque control travel a =

Speed regulation: At 760-765 minm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control roat speed	d stop	Fuel-de charact		Starting deliver	
min <sup></sup> i	cm²/1000 strokes 2	min 3	idle s	min; 4	cm³/1000 strokes 5	min · i 6	cm³/1000 strokes 7
750	18 mm RW	12 mm	RW	-	<b>-</b>	-	-

Checking values in brackets

03.84

K18

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 c

3. Edition

PE 12 ZW 160/120 RS 1015/11 RQU 750 ZWA 57 R

Replaces 1..83

1-12-9-4-5-8-11-2-3-10-7-6 $0-45-60-105-120-165-180-225-240-285-300-345° ^{+}0,5° (^{+}0,75°)$ 

Engine: MT 12 V 396

Note VDT-W-Gen./7

Komb.-Nr.
0 402 430 005

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65)

mm (from BDG)1. 12

	- p. 0550	(,45-2,05)		12	
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	vaive)
min-i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0=97,0	ļ
			1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,0 mm.

Upper rated	speed	<b>,</b> -	Medium ra	ated spe	ed	Lower rat	ed spee	d .	Torqu	ie control
Control lever deflection degrees	mm min** 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min- ' 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min - ! 8	Control- rod travel mm 9	min-1	Control- rod travel mm 11
ca. 52	750	18,0	-	-	-	-	-	-	•	-
	720 750 770 780 800	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0								

Torque control travel a =

mm

Speed regulation: At 760-765 minm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charac	elivery teristics I	Starting fuel delivery		
min	cm <sup>3</sup> /1000 strokes 2	min 3 idle stop	min ·	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7	
750	18 mm RW	12 mm RW	-	-	•	-	

Checking values in brackets

03.84

BOSCH

K19

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 26,5 d

2. Edition

ROUV 300-1200 ZWA 51 R PE 8 ZW 150/120 RS 1019/11

Replaces 11.83 Firm: MTU

Komb.-Nr. 0 402 438 020

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Engine MB 8 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2, 45, 2, 50)

mm (from BDCZV1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min- i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	_
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated	speed		Medium ra	ated spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees	mm min '	Control- rod travel mm min ' 3	Control lever flection degrees 4	min = 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min- ' 8	Control- rod travel mm 9	min-1 10	Control- rod travel mm
ca.85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	•

Torque control travel a =

Speed regulation: At 1230-1240 minimiless control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact	- •	Startin deliver	
min ' 1	cm <sup>3</sup> /1000 strokes 2	min Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm³/1000 strokes 7
1200	18 mm RW	300 <sup>-</sup> = 8,0 mm RW	•	٠	-	-

Checking values in brackets

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 19,9 b1 2. Edition

PE 6 ZW 150/120 RS 1021/11

RQUV 300-1200 ZWA 51 R

Replaces 11.83

Komb.-Nr. 0 402 436 052 1 - 2 - 3 - 4 - 5 - 6

MTU

 $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$ 

Engine: MB 6 V 331

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2.45-2.65)

mm (from BDZ)y1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	•	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values		valve)
min-i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> A1000 strokes	cm <sup>3</sup> /1000 strokes		
1	2	3	4	5		
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0		-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0		
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0		
				1		·

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees	mm min-: 2	Control- rod travel mm min-1	Control lever flection degrees 4	min 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-: 10	Control- rod travel mm 11
ca. 85	1200	8,0-21,0	ca. 30	250	2,2-14,6	ca.23	150	14,3-16,1	-	-
	1250 1300 1350 1420	12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0		375 500 600 730	6,0-7,2 2,6-3,7 0,8-2,1		300 400 570	7,3-8,6 2,8-4,3 0		
						<u> </u>	20 427	0 = 1	<u> </u>	<u> </u>

Torque control travel a =

Speed regulation: At 1230-1240 minm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery		
min 1	temperature 40°) cm³/1000 strokes	min Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7		
1200	18 mm RW	300 = 8,0 mm RW	-	<del>-</del>	-	<u>-</u>		

Checking values in brackets

WPP U01/4 MTU 29,9 c

10. Edition

RQUV 300-1100 ZWA 40 R PE 8 ZWM 140/120 RS 19/11 Komb.-Nr. 0 406 038 018

Replaces 11.83 MTU

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Engine MB 837 Ba (660 PS)

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

mm (from BDG)] 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension itorque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm //1000 strokes	
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600 200	9,0 9,0	143,0-163,0 71,0-91,0	14,0 (21,0) 14,0 (21,0)	138,0-168,0 66,0-96,0	
1100 300		C Sp 2	9,0 (13,0) 8,0 (12,0)	C Sp 2	
300			8,0 (12,0)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min '	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	1	Control- rod travel mm 9	min 10	control Control- rod travel mm
max. 9	1100	15,0-18,2	-	-	-	26	300	6,8-7,5	-	-
	1150 1200 1250 1330	10,4-14,8 4,8-10,8 0-6,8 0					120 250 400 500 700	12,0-14,0 8,0-10,2 2,8-4,3 0,9-2,9	,	

Torque control travel a = -

Speed regulation: At 1130-1145 m7mm1 less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-loa	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting deliver	
(Test or	temperature 40°) cm <sup>3</sup> /1000 strokes	min : 3	mın 4	cm²/1000 strokes 5	mın 6	mm RW «XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1100	323,0-327,0 (320,0-330,0)	•	500	238,0-250,0 (235,0-253,0)	100	18,0-18,2 mm RW
	(320,0-330,07		30C	64,0-69,0	1220	RW max. 5 mm

Checking values in brackets

WPP 001/4 MTU 22,4 c 5. Edition

Replaces 11.83

RQU 425/1100 ZWA 37 DR PE 6 ZWM 140/120 RS 38/11 Komb.-Nr. 0 406 036 026 1 - 2 - 3 - 4 - 5 - 6  $0 - 45 - 120 - 165 - 240 - 285^{\circ} \stackrel{+}{=} 0,5^{\circ} (\stackrel{+}{=} 0,75^{\circ})$ 

MTU Engine MB 833 Ea 500

Governor adjustement according to VD1-I-420/112 Note VDT-W-Gen./7

All test specifications apply only to Boson fuel-injection gump test benches and equipment

A. Fuel-injection-pump settings

Testoil-ISO 4113

Port closing a	t prestroke (	<u> </u>	mm strom BDCZyl	6 Fuel delivery	Spring pre-tension
Rotational	Cuntroli	Fuel delivery	Difference	ruel delivery	(torque control
speed	rod travel	Average value	in fuel delivery	Checking values	vaive
min	mm	cm=/1000 strokes	cm=/1000 strokes	cm <sup>3</sup> /1000 strokes	
•	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600 200 1080 550 425	9,0 9,0	143,0-163,0 71,0-91,0 C. Sp. 2 C. Sp. 5	14,0 (21,0) 14,0 (21,0) 9,0 (14,0) 11,0 (16,0) 12,0	138,0-16 8,0 66,0-96,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

0000		Control rod travel mm min	Medium ra Control lever llection degrees	ted spec min 5	ca Control- rod travel mm	Lower rat Control lever de- flection degrees 7	ed speed min 8	t Control- rod travel mm 9	Torqu min 10	control- control- rod travel mm
	600 1100 1150 1200 1250 1350	18,0-18,5 17,6-18,0 13,6-16,2 9,0-12,4 3,6-8,5 0 - 1,0	(Posit slide			ca. 27		1,4-1,8 17,0-18,0 10,0-14,0 6,0-6,4 2,6-4,2 1,4-1,8		-

Torque control travel à =

Speed regulation At 1130 min-1 timm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

	a delivery ernor control lever	Control rod stop at speed	Fuel-de charact	divery teristics	Starting fuel delivery		
(Test or	temperature 40	3, 3, 5, 5, 5		idle stop		mm RW	
min	cm 1000 strokes	min 3	min 4	om: 1000 strokes 5	min ) 6	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	
1080	352,0-356,0 (349,0-359,0)	•	550	277,0-295,0 (273,0-299,0)	100	18,0-18,2 mm RW	
	Shutoff solenoi D.5 - 1.5 mm ir front of stop	d	425	Idle 57.,0-53.0	High 1220	idle speed RW max. 5 mm	

Checking values in brackets

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 29.9 d

3. Edition

PE 8 ZWM 140/120 RS 1018/11 RQU 350-500/1050 ZWA 59 DR Komp.-Nr. 0 406 038 021

Governor adjustement according to VDT-I-420/112

7 - 2 - 5 - 3 - 4 - 5 - 7 - 8 je 45  $\pm 3,5$  ( $\pm 0,75$ )

Replaces 11.53 Firm MTU

MB 837 Ea Engine

537 kW (730 PS)

Note VDT-W-Gen./7

All test specifications apply only to Boson fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke

(1.95-2.15)

mm:from BDØyl. 8

Rotational	Control-	Fuel delivery	Ditterence	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve:
min	mm	cm3/1000 strokes	cm +1000 strokes	cm 1000 strokes	
1	2	3	1	5	
500	18,0	3/3,0-3/8,0	11,0 (16,0)	369,0-382,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1050		C, Sp. 2	10,0 (15,0)		
300	i	C, Sp. 5	9,0		
	Ì				

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated	speed		Medium ra	tea spec	ea	Lower rat	ea speed	3	Torqu	e controi
Control		Control-	Control	!	Control	Control		Control		Control
lever	i	rod	lever		roa	iever ae-	ļ	tod	1	rod
deflection	mm	travel	flection		travel	flection	ļ	travei		travel
degrees	min	mm min∴	degrees	min	mm	degrees	min	mm	טונט	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	700	18,0	ca. 43	500	6,6-9,1	ca. 27	300	7,1-8,3	-	-
	1070	17,6-18,0		400	12,0-17,0		100	15,3-18,0	)	
l	1150	9.6-14.0		570	0-4.0		200	12,0-15,7	t	į
3.	1230	0.4-7.0		660	0	ļ	400	1,5-5,2		ĺ
	1300	0					520	0	İ	
							75		l	

Torque control travel a =

Speed regulation At 1075-1085 mapmiless control roal travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°1	Control rod stop at speed	7.4	<b>%&amp;XXX</b> eMSt <b>te</b> erlauf 	Starting fixel delivery			
min 1	cm#1000 strokes 2	min 3	min 4	cm ~1000 strokes 5	m.n	om 1500 strokes		
1050	358,0-362,0 (355 0-365,0)	-	300	0,09-0,08	0,5	18,0-18,2 mm RW  off solenoid  - 1,5 mm in  t of stop		

Checking values in brackets

#### Test specifications Fuel injection pumps and governors En.

WPP 001/4 MTU 47,6 c

2. Edition

PEV 12 ZWM 160/120 RS 1030/11 Komb.-Nr. 0 406 030 999

RQU 425-600/1300 ZWA 62-1

Replaces.83 Firm: MTU

Note installation and testing instructions KH/VSK 40JP1. 1-4-10-7-5-2-12-9-3-6-8-11

Engine: MB 873

0-15-60-75-120-135-180-195-240-255-300-315°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°)

Specifications apply to test tubing 1 680 750 069. Please note instructions on All test specifications apply only to Bosch fuel-injection-pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke (2.45-2.65)

mm (from BDCZyl, 12

		(2,43-2,03)	-7.	9 14	
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1300	12,0	375,0-385,0	16,0 (24,0)	372,0-388,0	
1300	6,0	113,0-127,0	18,0 (27,0)	110,0-130,0	_[
425	6,0	31,0-51,0	16,0 (24,0)	27,0-55,0	•
1300	ļ	C Sp. 2			
425	6,5	C Sp. 5	12,0		
	1		Ì		i
			I		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium r	ated spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees	<b>州</b> 森 min=1 2	Control- rod travel 1 mm Mi min-1	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-: 8	Control- rod travel mm 9	min-1 10	Control- rod travel mm
50 <sup>±</sup> 0,5	800	12,0-12,5	ca.31	600	6,4-6,6	ca.18	425	6,4-6,6	-	-
	1300 12,5 4,0	13,5 1325-1340 1445-1485 1495-1605			0,5-2,0 0,5-2,0		300 500 640	10,8-14,0 3,2-5,3 0		

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

11.8.

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever temperature 40°)	Control rod stop at speed	Fuel-de charact	livery eristics Idle	Startin deliver	
min - 1 1	cm³/1000 strokes 2	min : 3	min 4	cm <sup>3</sup> /1000 strokes 5	min '	cm <sup>3</sup> /1000 strokes 7
1300 1300	381,0-385,0 RW = 13,5 mm	Full-load screw contacting	425	72,0-76,0 zu. Streuung 12,0	-	-

Checking values in brackets

\* Adjusted with KDEP 1533

Gaschaftsbereich Kiel Kundendienst Ktz Ausrustung – der Beschaftsbereich Republic uf German – der Bosch Gimbin Dr.Z Stottgart in Postfach 50 Printed in the Federal Republic uf German – mor malan Republic us Apgestie is Allem igne bar Appeti Bristo Simber – der Bussel Bristo Simber –

Inlet pressure 3 bar with overflow quantity 10 - 12 1/min
(measured at return).

Instead of an overflow valve connect a manually-operated valve of at least 1/2" nominal width into the return.

Overflow quantity as well as inlet pressure must be observed precisely.

Also note that the calibrating fluid temperature 42° - 45°C must be measured at the return.

## **Test specifications** Fuel injection pumps WPP 001/4 MTU 29,9 f and governors

2. Edition

PE 8 ZWM 150/120 RS 1035 RQU 300-500/1100 ZWA 59 DR

Komb.-Nr. 0 406 038 024

1-2-6-3-4-5-7-8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Governor adjustment according to VDT-I-420/112

Replaces 11.83

MTU Firm.

MB 837 EA -Engine:

Italien

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke

2,5-2,6(2,45-2,65) mm (from BDC)

Rotational speed min-1	ed rod travel Average value		Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000 1000 300	18,0 9,0 9,0	527,0-537,0 175,0-195,0 104,0-124,0	14,0(21,0) 12,0(18,0) 16,0(24,0)	524,0-540,0 170,0-200,0 99,0-129,0	
1100 800 425	12,3 13,2 6,7	Sect.C	12,0(18,0) 16,0(24,0) 12,0		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ited spe	ed	Lower rat	ed spee	d	Torqu	ie control
Control lever deflection degrees 1	mm 2	Control- rod travel min 1 3	Control lever flection degrees 4	min <sup>1</sup> 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min 1	Control- rod travel mm 9	min 1	Control- rod travel mm 11
ca.65	800 1100		ca.39	500	7,0	ca.33	425		100	12,3
	11,3 5,0 0	1125-1140	ca.19	300	7 <b>,</b> 0		300 400 500 535	13,0-15,0 7,8- 9,0 1,0- 3,3 0 - 0,5		13,1+0,2

Torque control travel a = 0,2 mm +0.05

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact	livery eristics	Starting fuel delivery		
min1 1	cm <sup>3</sup> /1000 strokes 2	min 1 3	min '	cm³/1000 strokes 5	min ¹ 6	cm <sup>3</sup> /1000 strokes 7	
1100	302,0-308,0 (300,0-310,0)	700 (Strap)	800	331,0-351,0 (326,0-356,0)	425	53,0-59,0	

Checking values in brackets

Testoil-150 4113

## **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 31,7 g

1. Edition

PE 8 ZWM 160/120 RS 2001

RQUV 300-1050 ZWA 65 R

Replaces

Komb.-Nr. 0 406 038 023

MTU Firm: Engine: 396-03

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

960 kW

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection, pump test benches and equipment

#### A. Fuel-injection-pump settings

inm (from BDC)y1. 8

Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
rod travel	Average value	in fuel delivery	Checking values	valve)
mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
2	3	4	5	
18,0	622,0-636.0	20,0 (30,0)	619,0 - 639,0	-
9,0	220,0-248,0	28,0 (42,0)	215,0 - 253,0	
9,0	104,0-128,0	16,0 (24,0)	99,0 - 133,0	
	į			j
	rod travel mm 2	rod travel Average value mm cm³/1000 strokes 2 3 18,0 622,0-636,0 9,0 220,0-248,0	rod travel Average value in fuel delivery cm <sup>3</sup> /1000 strokes 2 3 cm <sup>3</sup> /1000 strokes 4 2 18,0 622,0-636,0 20,0 (30,0) 9,0 220,0-248,0 28,0 (42,0)	rod travel Average value in fuel delivery Checking values  cm³/1000 strokes 2 cm³/1000 strokes  18,0 622,0-636,0 20,0 (30,0) 619,0 - 639,0  9,0 220,0-248,0 28,0 (42,0) 215,0 - 253,0

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm mm min	Control- Cod 1 - 1 travel min : 1	Medium ra Control lever flection degrees 4	min ·	ed  Control- rod trave! mm  6	Lower rat Control lever de- flection degrees 7	ed speed min 8	Control- rod travel mm 9		e control Control- rod travel mm
ca. 82	17,0 4,0 1250	18,0 1055-1075 1150-1210 0-2,0	ca. 27	375 200 300 500 720	8,0 14,3-17, 10,3-11, 1,9-3,7 0		300 200 400 590	8,0 10,8-14,2 3,9-5,0 0	-	-

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		Startin deliver	
min '	cm³/1000 strokes	min 3 idle stop	min 4	cm³/1000 strokes 5	min <sup>1</sup>	cm³/1000 strokes 7
		300 = RW 8,0 mm	-	•	-	-
Th or	ot known he full-load de h the engine in he engine inspe	livery is adjusted accordance with tion sheet.				

Checking values in brackets

## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,0 L

1. Edition

Er

PES 4 M 55 C 320 RS 152-1

RSF 375/2300 M 55

Komb.Nr. 0 400 074 964/Sales model 0 400 074 965

1 - 3- 4 - 2 0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes...

company Daimler-Benz

engine OM 601 53 kW

Europa

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15) mm (from BDC)

Control rod travel

RW 20,0-22,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1000	12,1+0,	3,1-3,2	0,25(0,3)		,	
375 1800 2200	6,4-6,6	0,5-0,6	0,10(0,15) 0,25(0,3) 0,25(0,3)			
Before st	arting	testing, see	back for	importa	nt .	
informati	on!					

Set uniform delivery according to the values in (

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	peed		Upper rat	Upper rated speed					Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	1	Control rod travel	Rota	itional speed		Rotational speed	Control rod travel		
lever	mm	rev/min	lever		mm	revi	min		rev/min	mm		
1	2	3	4		5	6		7	8	9		
13-17 (1 (2) (3)	min.12,6 6,4-6,6 **		50	7000	11,3-11 8,8- 9 - 0-1,0		2200 2500 2950	12 13 14	100	min. 20,6 11,8-12,0 12,1-12,2		
5	2,5	630-730		(E)				6	Switching pi	oint		

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	delivery (19)	Full-load speed 8a	Variations delivery	in fuel (17)	Starting f	uel delivery	
Test oil ter	mp 40°C (104°F)			18			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500* 8,8-9,2	1800	34,0-35,5 (33,0-36,5) 31,0-32,0 (30,0-33,0)	100 375 2500	min.55 5,0-6,0 (4,5-9,0) 22,0-26,0 (21,0-27,0)	6,0 (2a) 1,0 1,5 2,5 See (15) 3,0 Point 8 a (16)

Checking values in brackets

Cd. 2,4 less control rod travel than in Column 2

BOSCH

- 1. Position the idle-speed auxiliary spring at  $n = 400 \text{ min}^{-1}$  so that the control-rod travel is forced further by  $0.1^{-2}$  0.2 mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 46°. No change in control-rod travel after switching point up to 550 min-1.
  Control-lever position 30°. Rotational-speed range 350 min-1
- 4. Testing the pneumatic shutoff.:box

Control lever against idle stop.

At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

5. overlow valve 1 469 990 351

- 450 min<sup>-1</sup>.

- 6 \*FB (start of delivery) difference between max. and min. value: 1° camshaft
- 7 Set the idle at the PLA aneroid box. To do so, release the lock nut.
- 8 Set the pneumatic idle increase (PLA):
  At 0.4 bar overpressure, n = 425 min<sup>-1</sup>, RW (control-rack travel)
  = 8.4-9.9 mm (12-20 cm<sup>3</sup>/1000 strokes).
- 9 Check for leaks (vacuum test) at the PLA aneroid box

Apply 0.8 bar to the PLA aneroid box through a 3-way cock and a pressure gauge. Using the 3-way cock, separate the vacuum supply from the PLA and the pressure gauge. Permissible pressure drop = 30 mbar in 15s.

10 FBG (start of delivery sensor) adjustment Adjustment and locking of FBG as per the FB average value of all cylinders, 19.5  $\pm$  0.2 (0.3) °camshaft after cylinder 1.

WPP 001/4 MB 2,0 L 1

1. Edition

En

PES 4 M 55 C 320 RS 152-1 RSF 375/2250 M 55-1

company Daimler Benz

OM 601

53 kW

Sweden

1 - 3 - 4 - 2 0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.Nr. 0 400 074 959/Sales model 0 400 074 960

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 411

2,00-2,10 (1,95-2,15) min (from BDC)

RW 20,0-22,0 mm

Control rod travel

Control rod Spring pre-tensioning (compensating valve) Rotational speed Fuel delivery Difference Control rod Fuel delivery travel travel rev/min cm<sup>3</sup>/100 strokes cm<sup>1</sup>/100 strokes cm 1/100 strokes 6 12,1+0,1 3,1-3,20,25(0,3) 1000 0.5 - 0.60,10(0,15) 375 6.4-6.6 0,25(0,3)1800 0,25(0,3)2200 Befor starting testing, see back for important information!

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rat	ted sp	eed			Variations in co	introl rod trav	ret
Degree of deflection of control	Control rod travel	Rotational speed	Degree o deflection of contro	n	Control rod travel	Rota	itional speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever		mm	revir	กาเก		rev/min	mm
1	2	3	4		5	6		7	8	9
13-17	min.12,5 6,4-6,6		50	7	11,3-11 8,8-9,2		2200 2500	(12)	100 1800	min. 20,6 11,8-12,0
3	**	400		9	0-1,0		2950	14	1000	12,1-12,2
5	2,5	630-730		1	.,.			6	Switching p	oint

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	1 2 2 1	Variations delivery	in fuel 17	Starting f	uel delivery	!
Test oil tei	mp 40°C (104°F)		•	18			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm 1/1000 strakes	rev/min	cm <sup>4</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500* 8,8-9,2	1800	34,0-35,5 (33,0-36,5)	100 375	min. 55 5,0-6,0 (4,5-9,0)	6,0 1,0 1,5
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (15) 3,0 Point
							8 a 16

Checking values in brackets

Ca.2,4 less control rod travel than in Column 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuftgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

- 1. \*\* Position the idle-speed auxiliary spring at  $n=400 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 0.2 mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 46°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. Testing the pneumatic shutoff box

  Control lever against idle stop.

  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.
- 5. overlow valve 1 469 990 351
- 6 \*FB (start of delivery) difference between max. and min. value: 1° camshaft
- 7 Set the idle at the PLA aneroid box. To do so, release the lock nut.
- 8 Set the pneumatic idle increase (PLA):
  At 0.4 bar overpressure, n = 425 min<sup>-1</sup>, RW (control-rack travel)
  = 8.4-9.9 mm (12-20 cm<sup>3</sup>/1000 strokes).
- 9 Check for leaks (vacuum test) at the PLA aneroid box

  Apply 0.8 bar to the PLA aneroid box through a 3-way cock
  and a pressure gauge. Using the 3-way cock, separate the
  vacuum supply from the PLA and the pressure gauge. Permissible
  pressure drop = 30 mbar in 15s.
- 10 FBG (start of delivery sensor) adjustment
  Adjustment and locking of FBG as per the FB average value of all cylinders, 19.5 ± 0.2 (0.3) °camshaft after cylinder 1.

Continued on next page

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									-
	BOSCH	TEST SPECS	. IP ASS	SEMBLY		TEST SHE			
	Pump: Regulator:	PES 6 P 12 RE 30	20 A 720	RS 71	78	Type num	06. 90 ber: 0 412 7 ber: 0 421 8	726 822 890 009	
	IP ASSEMBLY	0 402 796	800			CUSTOMER	IDENT. NO.	:	
						*********	*********		*****
	Customer-specific Customer: Engine:	c details MACK E 7 - 40	00		922 <b>88</b> :	20022tou21		Min	Max
	Output kW: at 1/min:	298 -			Pul:	mark se wheel ition	Cyl. No.	6	
			Min	Max	(PC	cam)	°CS		S CYL (
				******		erance	+/-°CS	0.2	
	T E S T P R	E R E Q U	ISIT	E S	——————————————————————————————————————	erance	+/-°CS	0.5	<del></del>
	Test oil inlet temperature	°C	38	42	Actua	t i o n tor test	В -		
	Overflow valve		2 417 41	2 011	- Che	ck values embly warn	denoted by n-up time: 3	"P" 3 mins. a	ı <b>+</b>
	Inlet pressure	bar		3 011			i, U/Norm =		
ì	-				CONTRO	L-ROD PIC	KUP SETTING	;	
	Overflow	1/h	160	170	Tes	st speed	1/min	0	
	Calibrating nozzl holder assembly	Le-	1 688 90	1 101	Sett	ing value			
	Opening pressure	bar	207	210	•	Norm ntrol-rod	V	3.10	
	Perforated plate					avel htrol-rod	mm	12.95	13.05
	diameter	mm	0,6			avel	mm	12.90	13.10
	Test pressure				Check	c value			
	line		1 680 75	800 0					
	Dimensions:		<b>6</b> 0			Norm	V	1.70	
	Outer diameter	mm	6, 0			ntrol-rod		5 00	6 40
	x wall thickness x length	mm.	2,0 600			vel strol-rod	mm	5.90	6.40
	72295755288888888					vel	mm	5.85	6.45
	TEST SPE	CIFIC	ATIO	N S	Stop	position			
		\ <del>-</del>				lorm	V	min.	
	Setting values of - Check values de	noted by "	P"		tra	trol-rod	mm	0.5	1.0
	- No basic setting setting under S		erivery			trol-rod	mm.	0.4	1.1
	PORT CLOSING				SPEED	SENSOR SI	GNALS		
	DC catting cul		6		TACE	with con	trol rod in	stan na	cition
	PC setting cyl. Test pressure	bar	22	24		_	trol rod in		STUTON
	Prestroke		2 75	2.05	Spe		1/min	60	2 ^
	(from BDC) Prestroke	mm	2,75	2,85		amplitud amplitud		0.8 0.6	2.0 3.0
		mm	2,70	2,90	r hos	···		0.0	3.0
	Control-rod				Spe		1/min	600	
		mm	10,3	10,7		ference Litude to			
	Cam sequence		6 - 2 - 1 - 5 -			litude to	v	max. 1	-4

°CS +/-°CS +/-°CS

60 each 0,50

0.75

PC difference tolerance

tolerance

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Section C-

Injection pump with actuator

- Check values denoted by "P"

#### FUEL DELIVERY TEST AND SETTING

#### Test point V 1

Speed U/Norm Fuel delivery P Fuel delivery Dispersion P Dispersion Test point L1	1/min V cm3/1000str cm3/1000str cm3/1000str	900 3,400 269,0 266,0 5,0 9,0	271, 0 274, 0
Speed U/Norm Fuel delivery P Fuel delivery Dispersion P Dispersion	1/min V cm3/1000str cm3/1000str cm3/1000str cm3/1000str	325 1,45 41,0 38,0 8,0 12,0	47,0 50,0

						0404A /	98/99	
BOSCH	TEST SPEC	S. IP ASS	EMBLY		TEST SHEE	<del>-</del> ·		
Pump: Regulator:	PE 6 P 12 RE 24	0 A 320 R	RS 3239	)	Type numb	06.90 (1 er: 0 411 82 er: 0 421 89	6 785	
IP ASSEMBLY	0 401 996	701			CUSTOMER	IDENT. NO.:		
Customer-specific	r details			050051	********	C = 4 = 4 = 4 = 2 = 2 = 6 =	Min	Mov
	O (USA)						MIN	Max
Engine: TD 1:		TD 122 F	IQ					
Output kW:	272	242	•	РСп		Cyl. No.	1	
at 1/min:	1900	1900			e wheel			
		Min	Max		tion cam) '	°CS	0 of C	S CLY1
	******					+/-°CS	0.2	J CL
				P Tole	rance -	+/-°CS	0.5	
TEST PR	EREQU	ISIT	E S					<del></del>
Test oil inlet	°C	20			tion	В -		
temperature	٠,	38	42		or test	denoted by "	D# .	
Overflow valve		2 417 413	3 064	- Asse	mbly warm.	up time: 3	r" mine s	+
		- ,,, ,,,	, ,,,	n =	600 1/min.	U/Norm = 2	.5 V	
Inlet pressure	bar	1.5				·		
Overflow	1 /2-	100	* 20	CONTRO	L-ROD PICE	CUP SETTING		•,
Overrow	1/h	100	120	Tec	t speed	1/min	0	
				163	c speed	TIMITIE	U	
Calibrating nozzl	.e-			Setti	ng value			
holder assembly		1 688 90	1 019					
0-0-1	<b>.</b>				orm	V	3.10	
Opening pressure	Dar	207	210	tra	trol-rod		12 05	12 05
Perforated plate				. – -	trol-rod	mm	12.95	13.05
1 1	mm	0,8		tra		mm	12.90	13.10
								20120
Test pressure				Check	value			
line		1 680 750	0 067	•• ( ) •				
Dimensions: Outer diameter	mm	6.00		U/U	orm trol-rod	V	1.70	
x wall thickness		1.50		tra	_	mm	5.90	6.40
1	mm	1000			trol-rod			0000
	****			tra	vel	mm	5.85	6.45
TEST SPE	CIFIC	A T T O R	J C	Ston	position			
			• •	БСОР	postcion			
	. <del>-</del>			U/N	orm	V	min.	
Setting values of					trol-rod			
- Check values de				tra		mm	0.5	1.0
<ul> <li>No basic settin setting under S</li> </ul>	g. Equal d ection C	elivery		trav	trol-rod	mm	0.4	1.1
0000000	ccton o			CLG	VC.	TIME	0.4	7.7
PORT CLOSING				SPEED S	SENSOR SIG	NALS		
20				_				
PC setting cyl.	bar	1 25	27	- Test	with cont	rol rod in	stop pos	sition
Test pressure Prestroke	DAL	23	21	Spee	2d	1/min	60	
	mm	2,6	2,7	-	amplitude	•	0.8	2.0
Prestroke		•	-		amplitude		0.6	3.0
	mon.	2,55	2,75	-	-			
Control-rod travel	mm.	10,0	11,0	Spee	ed Terence	1/min	600	
Cam sequence	· <del></del> ·	1 - 5 - 3			itude to			
-		6 - 2 - 4			itude	V	max. 1.	. 4
no diec				-			3,	
		60 each						
	·	0.50 0.75				Continued	05 50-	
	.,					oonernaed.	on next	- hake

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Section C -

Injection pump with actuator

- Check values denoted by "P"

#### FUEL DELIVERY TEST AND SETTING

#### Test point V 1

Speed	1/min	700	
U/Norm	<b>v</b>	3,440	
Fuel delivery	cm3/1000str	251,0	254, 0
P Fuel delivery	cm3/1000str		257, 0
Dispersion	cm3/1000str	5,0	-
P Dispersion	cm3/1000str	9, 0	

#### Test point L1

	Speed	1/min	<b>250</b>	
	U/Norm	<b>v</b>	1,360	
	Fuel delivery	cm3/1000str	17,0	27,0
P	Fuel delivery	cm3/1000str	14,0	30,0
	Dispersion	cm3/1000str		
P	Dispersion	cm3/1000str	9, 0	

BOSCH	TEST SPEC	S. IP ASS	EMBLY		TEST SHEET Edition:	r: DEE 10,1 06.90 (1)		
Pump: Regulator:	PES 6 P 1 RE 24	10 A 720	R <b>S</b> 323	81	Type number Type number	er: 0 412 010 er: 0 421 890 IDENT. NO.:	5 729 0 006	
IP ASSEMBLY	0 402 196				CUSTOMER .	IDENI. NO.:		
Customer-specifi Customer: Engine: Output kW: at 1/min:	c details JOHN [ 6101 HI 224	RW 02 (tra	actor)	I	Pulse wheel		Min	Max
222222222375537		======= Min	Max			°CS	10.5 0	CS CYL1
	3C#3CE##E	E=NEXCE38:				+/-°CS +/-°CS	0.2	
TEST PR	EREQU	ISIT	E S	F .	loterance			<del></del>
Test oil inlet temperature	°C	38	42	Act	e c t i o n tuator test Check values o	B - denoted by "	p"	
Gverflow valve		2 417 413	3 057	- 1	Assembly warm- n = 600 1/min	-up time: 3	mins. a	t
Inlet pressure	bar	1.5			NTROL-ROD PICE		<del></del>	
Overflow	1/h	-	-	001	Test speed	1/min	0	
Calibrating nozz holder assembly	le-	0 681 343	3 009	Se	etting value	V	3.10	
Opening pressure	bar	172	175		Control-rod travel	mm	12.95	13.05
Perforated plate diameter	mm	<u>-</u>	_	P	Control-rod travel	mm	12.90	13.10
Test pressure	ımı	1 680 750	015	Cì	neck value	v	1.70	
Dimensions: Outer diameter	mm	6.00			Control-rod	V		
x wall thickness		1.50 600		D	travel Control-rod	mm	5.90	6.40
x length			e====	_	travel	mm	5.85	6.45
TEST SPE	CIFIC	ATIOI	N S	St	top position			
Section Setting values o	A - f injectio	ח חווחח			U/Norm Control-rod	V	min.	
- Check values d	enoted by	"P"			travel	mm	0.5	1.0
- No basic setti setting under		delivery		Р	Control-rod travel	mm	0.4	1.1
PORT CLOSING				SPI	EED SENSOR SIG	GNALS		
PC setting cyl.		1_		- 1	Test with cont	trol rod in	stop po	sition
Test pressure Prestroke	bar	25	27		Speed	l/min	60	
(from BDC)	mm	3.45	3.55	_	pos.amplitude	e V	0.8	2.0
Prestroke (from BDC)	mm	3.40	3.60	P	pos.amplitude	e v	0.6	3.0
Control-rod travel	mm		12.00		Speed Difference	1/min	600	
Cam sequence		1 - 5 - 3 6 - 2 - 4			Amplitude to amplitude	v	max. 1	.4
PC difference tolerance tolerance	°CS +/-°CS +/-°CS	60 each 0.50 0.75				Continued	on nex	t page

Section C-

Injection pump with actuator

- Check values denoted by "P"

FUEL DELIVERY TEST AND SETTING

Test point V 1

Speed	1/min	1100	
U/Norm	v	2.706	
Fuel delivery	cm3/1000str	176.0	178.0
P Fuel delivery	cm3/1000str	173.0	181.0
Dispersion	cm3/1000str	5.0	
P Dispersion	cm3/1000str	9.0	

Test point L1

Speed 1/min 425	
U/Norm V 1.430	
Fuel delivery cm3/1000str 12.0 20.	. 0
P Fuel delivery cm3/1000str 9.0 23.	. 0
Dispersion cm3/1000str 6.0	
P Dispersion cm3/1000str 10.0	

				0404A / 9		
BOSCH	TEST SPE	CS. IP ASSEMBLY	TEST SHE	ET: VOL 12.	2 f	
			Edition:	06. 90 (	1)	
Pump:	PE 6 P 1	20 A 320 RS 320	-, -, -,	ber: 0 411 82	6 772	
Regulator:	RE 24		Type num	ber: 0 421 89	0 008	
			CUSTOMER	IDENT. NO.:		
IP ASSEMBLY	0 401 99	6 700				
ない こうしゅ はまま 日本 日本 日本 日本 日本 日本 日本 日本 日本 日本 日本 日本 日本						
Customer-specif					Min	xeM
Customer:	VOLV TD 12	0 2 ES	**********			25555
Engine:	290	.213	70		_	
Output kW: at 1/min			PC mark Pulse wheel	Cyl. No.	1	
11.44   1 0 0	=		position			
,		Min Max	(PC cam)	°CS	n of C	S CYL1
こととは本井で中央の名の名称を	*****	****	Tolerance	+/-°CS	0.2	.S CILI
			P Tolerance	+/-°CS	0.5	
TEST P	REREQ	UISITES		, ,	•••	
	•					
Test oil inlet			Section	В -		
temperature	°C	38 42	Actuator test			
			- Check values	denoted by	"P"	
Overflow valve		2 417 413 064	- Assembly warm	n-up time: 3	mins. 8	at
			n = 600  1/mir	1, U/Norm = 2	2.5 V	
Inlet pressure	bar	1.5	· · · · · · · · · · · · · · · · · · ·			
- 67			CONTROL-ROD PIC	KUP SETTING		
Overflow	1/h	100 120	_			** <b>*</b>
			Test speed	1/min	0	
Calibrating non	-10		Canalana			
Calibrating noza holder assembly	716-	1 688 901 019	Setting value			
norder assembly		1 000 301 013	U/Norm	V	2 10	
Opening pressure	ha <del>r</del>	207 210	Control-rod	V	3.10	
opening pressure	- Dar	207 210	travel	<b></b>	12 05	12.05
Perforated plate	<b>a</b>		P Control-rod	mm	12.95	13.05
diameter	men	0,8	travel	mm	12.90	13.10
		0, 5	CLUVEL	TITIT	12.90	13.10
Test pressure			Check value			
line		1 680 750 067	oncon value			
Dimensions:			U/Norm	V	1.70	
Outer diameter	mm	6.00	Control-rod	•	1.70	
x wall thickness	mm.	1.50	travel	mm	5.90	6.40
x length	mm	1000	P Control-rod			
		*******	travel	mm	5.85	6.45
TEST SPE	CIFIC	CATIONS	Stop position			
	<b>A</b>					
	A -		U/Norm	V	min.	
Setting values of	i injectio	on pump	Control-rod			
<ul> <li>Check values d</li> <li>No basic setti</li> </ul>			travel	mm	0.5	1.0
setting under		delivery	P Control-rod		<b>.</b> ,	
secting under	section c		travel	mn	0.4	1.1
PORT CLOSING			SPEED SENSOR SI	CNATC		
TORT CLOSING			SLEED SENSOR ST	GNALS		
PC setting cyl.		1	- Test with con	trol rod in	C+CD DC	
Test pressure	bar	25 27	- 1030 WICH COM	cror rod in	scop po	SICION
Prestroke	Jul	20	Speed	1/min	60	
(from BDC)	nm	3, 6 3, 7	pos.amplitud	,	0.8	2 0
Prestroke		<b>3, 3</b> , .	P pos.amplitud			2.0
(from BDC)	mm	3,55 3,75	- hansamhtten	- <del>-</del>	0.6	3.0
Control-rod		-,	Speed	1/min	600	
travel	mm	10,0 11,0	Difference	-,	550	
Cam sequence		1 - 5 - 3 -	Amplitude to			
		6 - 2 - 4	amplitude	V	max. 1	.4
na	• • •		-		<del>-</del>	-
PC difference	°CS	60 each				
tolerance	+/-°CS	0.50				
tolerance	+/-°CS	0.75		Continued	on nex	t page
						-

Min Max

Section C.

Injection pump with actuator

- Check values denoted by "P"

#### FUEL DELIVERY TEST AND SETTING

Test point V 1

	Speed	1/min	700	
	U/Norm	V	3,100	
	Fuel delivery	cm3/1000str	248.0	251,0
P	Fuel delivery	cm3/1000str		254, 0
	Dispersion	cm3/1000str	5.0	
P	Dispersion	cm3/1000str	9.0	

#### Test point L1

	Speed	l/min	250	
	U/Norm	V	1,300	
	Fuel delivery	cm3/1000str	19,0	27,0
P	Fuel delivery	cm3/1000str	16,0	30,0
	Dispersion	cm3/1000str	5,0	
P	Dispersion	cm3/1000str	9, 0	

BOSCH TEST SPECS. IP ASSEMBLY TEST Pump: PES 6 P 120 A 720 RS 3184 Type Regulator: RE 24 Type

TEST SHEET: DEE 7,7 1
Edition: 06.90 (1)
Type number: 0 412 026 727
Type number: 0 421 890 006
CUSTOMER IDENT. No.: ----

IP	ASSEMBLY	0 402 196 700

Customer-specif Customer:						Min	Max
Customer: Engine:		DEERE		在 化苯基苯基苯苯苯基基基基基基基		*****	
Output kW:	6.466	, A		PC mark	C1 No	•	
at 1/min	161			Pulse wheel	Cyl. No.	1	
25.23.25.25.25.25.25.25.25.25.25.25.25.25.25.							
		Min	Max	position (PC cam)	°CS	10 5	= 5 CC CV
					+/-°CS		of CS CY
		<b></b>		*01010100	+/-°CS	0.2 0.5	
TEST PI	REREQ	UISIT	E S	1 TOTELBRICE	T/- C3	0.5	
Test oil inlet				Section	В -		
temperature	°C	38	42	Actuator test	•		
•			. –	- Check values	denoted by	"P"	
Overflow valve		2 417 41	3 057	- Assembly warm			я÷
		<b>-</b>	<b>3 </b>	n = 600 1/min			a c
Inlet pressure	bar	1.5			, 0,000		
<b>₹</b>				CONTROL-ROD PIC	KIIP SETTING		
Overflow	1/h	-	_		WOI OFFI		
	•			Test speed	1/min	0	
				***************************************	± / M	v	
Calibrating noza	zle-			Setting value			
nolder assembly		1 688 90	101	001020			
•				U/Norm	V	3.10	
pening pressure	e bar	207	210	Control-rod	•	3.10	
Earle D For a -		207	410	travel	mm	12.95	13.05
erforated plate	<u>a</u>			P Control-rod	*1#11	ب د د عد	13.05
liameter	mm	0,6	_	travel	mm	12.90	13.10
		-		CE G V C.2	111111	16.30	13.10
est pressure				Check value			
line		1 680 75	ብ በ15	CHECK ABINE			•
imensions:			0 015	U/Norm	V	2 20	
uter diameter	mm	6.00			V	1.70	
wall thickness		1.50		Control-rod		F 00	
c length	mm .	600		travel	mm	5.90	6.40
. Tengen				P Control-rod		- 0-	
			24525	travel	mm	5.85	6.45
TEST SPE	CIFI	CATIO	N S	Stop position			
	•			<b>**</b> ***	~=	_	
	A -			U/Norm	V	min.	
Setting values o	I injecti	on pump		Control-rod			
Check values d				travel	mm	0.5	1.0
No basic setti	ng. Equat	gerivery		P Control-rod		<b>-</b> .	
setting under	Secriou C	1		travel	nm	0.4	1.1
ORT CLOSING				SPEED SENSOR SIG	GNALS		
<del>-</del>		•					
C setting cyl. est pressure	bar	1 25	27	- Test with cont	rol rod in	stop po	sition
restroke				Speed	1/min	60	
from BDC)	mm	3.55	3.65	pos.amplitude		0.8	2.0
restroke		•••	•••	P pos.amplitude		0.6	3.0
from BDC)	mm	3.50	3.70	• • • • • • • • • • • • • • • • • • • •	•	0.0	3.0
ontrol-rod				Speed	1/min	600	
ravel	ram.	9.0	12.00	Difference	-,	000	
am sequence		1 - 5 - 3		Amplitude to			
•		6 - 2 - 4		amplitude	V	max. 1	. 4
		0 2 - 4			-	I	• •
difference	°CS	60 each					
tolerance	+/-°CS	0.50					
tolerance	+/-°CS	0.75			Continued	מסת מס	t nage
	-	- · ·				ATT TIEN	- hake

Min Max

Section C-

Injection pump with actuator

- Check values denoted by "P"

#### FUEL DELIVERY TEST AND SETTING

#### Test point V 1

	Speed	1/min	1100	
	U/Norm	V	2,710	
	Fuel delivery	cm3/1000str	140,0	142,0
P	Fuel delivery	cm3/1000str		145,0
	Dispersion	cm3/1000str	6, 0	
P	Dispersion	cm3/1000str	10,0	

#### Test point L1

	Speed	1/min	425	
	U/Norm	V	1,400	
	Fuel delivery	cm3/1000str	17, 0	25, 0
P	Fuel delivery	cm3/1000str	14,0	28,0
	Dispersion	cm3/1000str	8,0	
P	Dispersion	cm3/1000str	12,0	

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